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ABSTRACT

This publication of proceedings, most in English and some in Chinese, of a conference on Chinese languages and linguistics include the following papers: "On Rule Effect and Dialect Classification" (Chin-Chuan Cheng); "Cross-Linguistic Typological Variation, Grammatical Relations, and the Chinese Language" (Bernard Comrie); "Is Chinese a Pragmatic Order Language" (Shuanfan Huang, Kawai Chui); "Origin of Seven Typological Characteristics of the Chinese Language" (Tsu-lin Mei); "Some Remarks on Word Order and Word Order Change in Pre-Archaic Chinese" (Alain Peyraube); "Formosan Clause Structure" (Stanley Starosta); "A Minimalist Approach to a Contrastive Analysis of English, Chinese, and Japanese" (Ting-chi Tang); "Types of Tone Sandhi in Mandarin Dialects and a Formal Model of Tone" (Mei-chih L. Chang); "Stress Patterns in Tonal Languages" (Robert L. Cheng, Chin-chin Tseng); "Cross-Language and Cross-Typological Comparison of Conceptual Representations Related to Grammatical Form" (Susan Duncan); "Origin of Vowel Transfer in Tangut" (Hwang-Cherng Gong)"; "Loose vs. Tight Syllables in Chinese Dialects" (Hirata Shoji); "Spoken Rhythm of Chinese Tongue Twisters" (Yuchau E. Hsiao, Chin-wei Wu); "Causative Compounds Across Chinese Dialects" (Lisa Cheng, James Huang, Audrey Li, Jane Tang); "A Syntactic Typology of Formosan Languages--Case Markers on Nouns and Pronouns" (Paul Jen-kuei Li); "After Being Refused: Response to Face-Threatening Speech Acts" (Chao-chih Liao); "Directional Constructions in Taiwanese" (Chin-fa Lien); "Identifying the Parameters for a Typology of Chinese Affixation" (Yen-Hwei Lin); "Discourse Organization and Anaphora in Spoken and Written Chinese Discourse" (Ming-Ming Pu); "The Typology of Tone in Tibetan" (Jackson T.S. Sun); "Topic Choice, Switch Reference, and Zero Anaphora" (Liang Tao); "On the Separation and Combination of Several Disposal Constructions in Classical Chinese (Pei-chuan Wei); "Word Order Flexibility in Chinese" (Zhiqun Xing); "Aspects of Prosody in Mandarin Discourse" (Li-chiung Yang); "Toward a Typology of Tense, Aspect, and Modality in the Formosan Languages" (Elizabeth Zeitoun, Lillian Huang); and "Semantic Schema and Metaphorical Extension" (Meichun Liu). (MSE)

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國際研討會論文集

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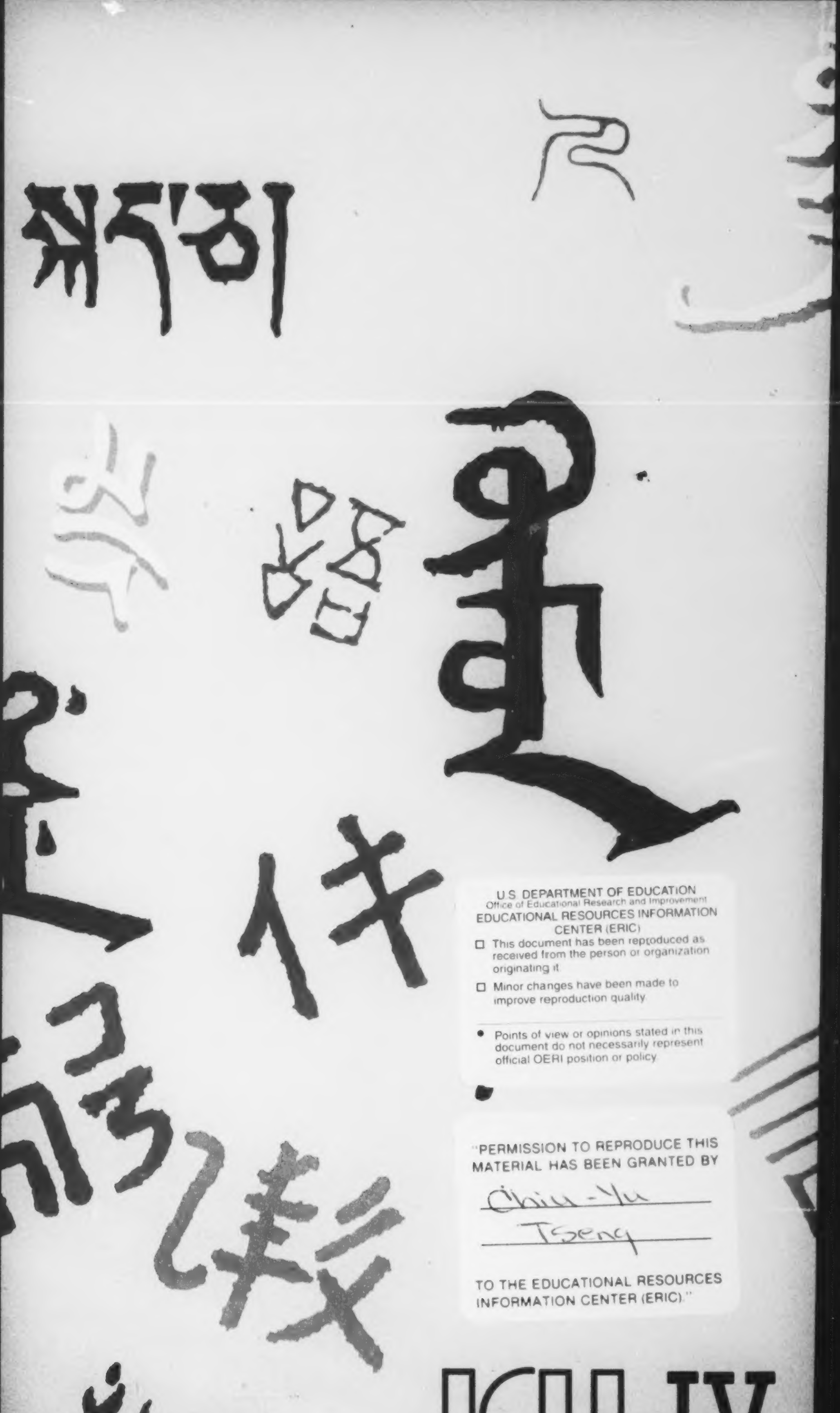

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本屆主題／語言類型

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中華民國八十三年七月十八日至二十日
第四屆中國境內語言暨語言學國際研討會論文集
Proceedings of the Fourth International Symposium on Chinese Languages and Linguistics (July 18-20, 1994)

編輯：何大安　鄭秋豫
Edited by: Dah-an Ho　Chiu-yu Tseng

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Academia Sinica
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第四屆中國境內語言暨語言學國際研討會
民國83年7月18日至20日，中央研究院

The Fourth International Symposium on Chinese Languages and Linguistics
July 18-20, 1994, Academia Sinica

會議議程
Symposium Program

◎主題：語言類型

Parasession: Typological Studies of Languages in China

◎會議地點：中央研究院學術活動中心二樓第一會議室

Conference Venue: 2F, Conference Hall, Activity Center, Academia Sinica

◎主辦單位：中央研究院歷史語言研究所

Organized and funded by: The Institute of History and Philology,
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七月十八日（星期一） July 18 (Monday)

8:30-9:00 報到 Registration
9:00-9:20 開幕式 Opening Ceremony
李遠哲院長、管東貴所長、何大安教授
President Y.T. Lee, Director T. K. Kuan, Professor D.-A. Ho
9:20-10:20 專題演講 Invited Speech
邀請講席：Bernard Comrie教授 Invited Speaker: Prof. Bernard Comrie
講題：Cross-linguistic Typological Variation, Grammatical Relations, and the Chinese Language
主持人：王士元教授 Chair: Professor William S.-Y. Wang
10:20-10:40 休息 Break
10:40-12:40 第一場 主題：漢語方言 主持人：梅祖麟教授
Session 1 Topic: Chinese Dialectology Chair: Prof. Tsu-lin Mei

講員 Speaker	題目 Title
平田昌司 Hirata Shoji	漢語方言音節"鬆緊"的南北差異
魏培泉 P'ei-chuan Wei	論古代漢語中幾種處置式在發展中的分與合
連金發 Chin-fa Lien	臺灣閩南語的趨向詞--方言類型和歷史的研究
邢志群 Zhiqun Xing	Word Order Flexibility in Chinese: A Typological Study of Mandarin, Min, and Yue Dialects

12:40-14:20 午餐 Lunch
14:20-15:20 專題演講 Invited Speech
邀請講席：湯廷池教授 Invited Speaker: Professor Ting-chi Tang
講題：A "Minimalist" Approach to a Contrastive Analysis of English, Chinese, and Japanese
主持人：貝羅貝教授 Chair: Professor Alain Peyraube
15:20-15:40 休息 Break
15:40-17:10 第二場 主題：句法 主持人：殷允美教授
Session 2 Topic: Syntax Chair: Prof. Yuen-mei Yin

講員 Speaker	題目 Title
李豔惠、黃正德 湯志眞、鄭禮珊 L.-S. Lisa Cheng, C.-T. James Huang, Audrey Li, amd C.-C. Jane Tang	Causative Compounds across Chinese Dialects: A Study of Cantonese, Mandarin and Taiwanese
林燕慧 Yen-Hwei Lin	Identifying the Parameters for a Typology of Chinese Affixation
劉美君 Meichun Liu	Semantic Schema and Metaphorical Extension: a study of the Mandarin V-R compounds as a radial category

18:00-20:00 晚餐（地點：學術活動中心，參加人員：講員及工作人員）
Dinner (location: Activity Center; participants: speakers and staff only)

七月十九日(星期二)　July 19 (Tuesday)

9:00-10:00　專題演講　Invited Speech
邀請講席：鄭錦全教授　Invited Speaker: Professor Chin-Chuan Cheng
講題：論規則效果及方言區分
On Rule Effect and Dialect Classification
主持人：丁邦新教授　Chair: Professor Pang-hsin Ting

10:00-10:20　休息　Break

10:20-12:20　第三場　主題：聲韻學　主持人：王　旭教授
Session 3　Topic: Phonology　Chair: Prof. Samuel Hsu Wang

講員 Speaker	題目 Title
鄭良偉、曾金金 Robert L. Cheng and Chin-chin Tseng	聲調語言中重音的類型
張美智 Mei-chih Laura Chang	Types of Tone Sandhi in Mandarin Dialects and a Formal Model of Tone
楊麗瓊　Li-chiung Yang	Aspects of Prosody in Mandarin Discourse
蕭宇超、吳瑾瑋 Yuchau Hsiao and Chin-wei Wu	漢語饒舌歌的口語節奏：從語言類型談起

12:20-13:40　午餐　Lunch

13:40-14:40　專題演講　Invited Speech
邀請講席：黃宣範教授　Invited Speaker: Professor Shuanfan Huang
講題：Is Chinese a Pragmatic Ordering Language?
主持人：鄒嘉彥教授　Chair: Professor Benjamin T'sou

14:40-15:00　休息　Break

15:00-17:00　第四場　主題：篇章　主持人：曹逢甫教授
Session 4　Topic: Discourse　Chair: Prof. Feng Fu Tsao

講員 Speaker	題目 Title
陶　亮　Liang Tao	Topic Choice, Switch Reference and Zero Anaphora: The On-line Construction of Grammar
濮明明　Ming-ming Pu	Discourse organization and anaphora in spoken and written discourse
廖招治　Chao-chih Liao	After being refused: response to face-threatening speech acts
Susan Duncan	Cross-language and cross-typological comparison of conceptual representations related to grammatical form

七月二十日(星期三)　July 20 (Wednesday)

9:00-10:00　專題演講　Invited Speech
邀請講席：帥德樂教授　Invited Speaker: Professor Stanley Starosta
講題：Formosan Clause Structure: Transitivity, Ergativity, and Case Marking
主持人：陳重瑜教授　Chair: Professor Chung-yu Chen

10:00-10:20　休息　Break

10:20-12:20　第五場　主題：少數民族語言　主持人：Robert Blust教授
Session 5　Topic: Minority Languages　Chair: Prof. Robert Blust

講員 Speaker	題目 Title
李壬癸 Paul J. K. Li	A Syntactic Typology of Formosan Languages -- Case Markers on Nouns and Pronouns
黃美金、齊莉莎 Lilian M. Huang and Elizabeth Zeitoun	Toward a typology of tense, aspect and modality in the Formosan languages: a preliminary study
龔煌城 Hwang-cherng Gong	西夏語音韻轉換的起源—重疊複合詞 (西夏語韻母系統擬測之一)
孫天心 Jackson T.-S. Sun	The Typology of Tone in Tibetan (藏語聲調類型)

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Panel Discussion on Typological Studies of Languages in China
Chair: Professor Paul J. K. Li
特約討論人：丁邦新教授、王士元教授、貝羅貝教授、
梅祖麟教授、鄒嘉彥教授
Panelists: Professor Tsu-lin Mei、Professor Alain Peyraube、
Professor Pang-hsin Ting、Professor Benjamin T'sou、
Professor William S.-Y. Wang

15:40-16:00　休息　Break
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The Fourth International Symposium on
Chinese Languages and Linguistics
July 18-20, 1994

On Rule Effect and Dialect Classification

Chin-Chuan Cheng
University of Illinois at Urbana-Champaign

Abstract

In the literature, language behavior is considered rule-governed. It is therefore appropriate to carry out linguistic analysis in terms of rules. However, in dialect comparisons, listing of shared rules simply reiterates dialect features and does not seem to produce a synthetic picture of similarity or difference. To achieve such an overall measurement, we need to study dialects in terms of "rule-effect". Some rules affect a large amount of linguistic entities such as words, while others worm their way through a very small portion of the lexicon. Quantitative information of this sort is the basis for measuring rule effects. Specifically, two effect-comparison models are presented. One is the measurement of dialect similarity, and the other is the calculation of mutual intelligibility. The similarity model mainly tabulates the ratio of shared items over all items of concern. The mutual intelligibility model incorporates a weighting hierarchy that takes into consideration communication signal enhancement' and noise interference. The requirements of adequate database, the theoretical constructs involved, and possible pitfalls in the overall measurements are discussed. The goal of this research is to provide a principled way to present rule effects. Language typology may be studied in terms of the numerical measurements these effect-theoretic models produce. Thus linguistics can provide description of language phenomena, explain them with rules, and give a synthetic account of rule effects.

1. Rules and Rule Effects

We conventionally analyze language change in terms of rules. For example, 心 and 新 belonged respectively to -m ending and -n ending rimes in Middle Chinese but are now homophones in Beijing dialect. The phonological merger of this pair and of other words warrants the following rule with respect to the syllable ending:

(1) -m > -n

This rule can account for the change. And in the past we were satisfied with such a representation of language evolution. In fact, rules have been the main means for describing dialectal differences and for establishing dialect classification. For example, Ting (1982) lists 16 criteria for classification as variously discussed in Li (1937), Forrest (1948), Tung (1953), Yuan (1960) and Zhan (1981). As presented by Ting, most of the criteria relate to historical rules. These publications span half a century. They show the dominance and persistence of the concept of rules. Only a small number of the criteria concern dialect characteristics. We recast Ting's listing of those regarding initials as follows, adding "characteristics" to highlight the criteria that are not strictly derivation oriented:

(2) a. Change of Middle Chinese voiced stop initials
b. Change of Middle Chinese bilabial stops
c. Merger of f- and xu- -- characteristics
d. Change of Middle Chinese 知徹澄 initials
e. Merger of n- and l- -- characteristics
f. Change of Middle Chinese 照穿床審禪 initials
g. Palatalization of Middle Chinese velar initials
h. Loss of nasality of Middle Chinese nasal initials
i. Presence of voiced sibilants -- characteristics

Of these nine criteria, three pertain to dialect characteristics. Of course, these characteristics can be attributed to some historical rules. For example, in Wuhan and Chengdu the Middle Chinese n- and l- initials changed to an alveolar nasal that has a variant l-, hence the merger or free variation of n- and l- (Beijing University 1962, 1989, henceforth the *Hanyu Fangyin Zihui*). Thus this characteristics criterion reflects the effects of the change of these initials. However, in the past our predominant interest in analytical mechanisms such as rule format, rule ordering, and rule interaction somehow blurred the picture of the language as an integral living thing. Rule effects have not been the focus of linguistic inquiries. As we reviewed the historical rules implicit or explicit in the criteria above and in Chen (1976), Hashimoto (1979) and Tsai-fa Cheng (1985), we became more curious about what could be said regarding the consequences of those changes.

Let us return to the -m and -n merger. Historically that was what happened to Beijing and most other Northern Dialects. What effects can we describe? Naturally, the most obvious effect of this rule is that there are no more syllables ending in the bilabial nasal. That is one statement we can make to describe the dialect of Beijing. A more significant statement is to present the general phonological constraint that the bilabial nasal cannot occur in syllable-coda position. This constraint will then explain, for example, why the -m syllable-ending of loan words from another dialect or from transliteration of other languages has to be substituted by an alveolar or velar nasal.

Indeed, linguists have talked about constraints as language characteristics. Other characteristics such as word order, ergativity, case marking, and relative clauses have been the bases for making typological statements (Comrie 1989). In addition to those properties listed in (2), presence or absence of closed syllables, number of tones, etc. have been utilized to establish dialect classification. From the -m and -n merger we see that language characteristics may be introduced or changed by rules. However, characteristics are not the only type of effects we are interested in studying. As we look beyond the rules of a single language, cross-language comparisons in terms of rule effects can be discussed in several ways. Traditionally, typological studies investigate language differences and make statements on presence or absence of certain characteristics. Recently, we have ventured into the area of quantitative measurements, hoping to answer some of the most frequently asked questions concerning Chinese: How different are Chinese dialects? Are they mutually intelligible? Our conventional answers to these questions usually reiterate the classification criteria. For example, we would say that in Northern Dialects the Middle Chinese -m ending has merged with -n while in the dialects in the south -m remains. That shows dialectal differences, indeed. But does that merger make northern dialects unintelligible to southern dialect speakers? Does that rule make northern and southern dialects very different? What is the degree of difference? Our quantitative studies of Chinese dialects have attempted to establish some methods for numerical measurements of dialect similarity and mutual intelligibility (Cheng 1982, 1992, 1994). We hope to be able to discuss rule effects quantitatively and therefore more definitively. We feel that the following are interesting and fertile areas to focus our attention and to raise new sets of linguistic questions.

(3) Rule effects on dialect
  a. characteristics -- qualitative-quantitative statements
  b. similarity -- quantitative measurements
  c. mutual intelligibility -- quantitative measurements

Typological studies of various languages in the past have provided abundant examples of how to compare language characteristics qualitatively. We have indicated above how rules change language constraints and other characteristics. Therefore we propose that both rules and rule effects be stated to give a fuller picture of a comparison. In (3) we label this comparison as a type of qualitative-quantitative investigation. In reality, quantitative information is often implicitly used. For example, to say that in Beijing the syllable coda cannot be -m means that all the syllables ending in -m earlier in history have been changed to end in -n. "All", "none", and "some" are quantifiers. Thus judgments on language characteristics often take quantity into consideration. This type of quantification, however, has been used inconsistently, with varying degrees of precision and verifiability. The discussion above has shown that rule effects should be an important part of a rule analysis. In the remainder of this paper we will examine the possibilities of quantifying rule effects on dialect similarity and mutual intelligibility.

2. Rule Effects on Dialect Similarity

We will examine the effects of the rule contained in criterion (1a) pertaining to the historical change of voiced stop initials. It is well known that the voiced stops have remained in Wu and some Xiang dialects as voiced but have become devoiced in other dialects. To see the effects of devoicing, we will specifically study Beijing, a Northern Dialect, and Suzhou, a Wu variety.

To see the extent the change of voiced stops affects the similarity between Beijing and Suzhou, we need to define the carriers of the change. A phonological change such as this one is carried by words. In Chinese a word is normally coterminous with a syllable. Thus we may use "word", "syllable", and "lexical item" interchangeably. We have tabulated the occurrences of items in relation to these Middle Chinese initials. In the following listing the first consonant in each line is for Middle Chinese. The modern reflexes are given after the colon. The number of items affected are given under Beijing and Suzhou separately. The database is the DOC (Dictionary on Computer) file that has been partially updated according to the second edition of the *Hanyu Fangyin Zihui*.

(4)				Beijing	Suzhou
a.	b	:	b		82
b.	b	:	p	38	
c.	b	:	pʰ	39	
d.	b	:	f	2	
e.	d	:	d		107
f.	d	:	t	56	1
g.	d	:	tʰ	53	2
h.	g	:	g		6
i.	g	:	dʑ		55
j.	g	:	tɕ	27	2
k.	g	:	tɕʰ	29	
l.	g	:	k	3	
m.	g	:	kʰ	2	
n.	Total			249	255

First, the two total numbers are different because alternative readings for individual words are included. The devoicing in Beijing actually involves two features. The voiced stops became voiceless aspirated in Even tone and voiceless unaspirated in Oblique tones. All the items involved are uniformly voiceless and thus the rule has created the phonotactic that there are no voiced stops in modern Beijing. The aspiration part of the change is not without exception, for example, 特 and 突, which were in an Oblique tone and are now pronounced with an aspirated alveolar stop. Furthermore, in both Beijing and Suzhou, palatalization of the velar initials has occurred. The f- initial items are the two readings of the word 埠, in low tone and in high falling tone.

The five items pronounced with voiceless initials in Suzhou are shared by Beijing. However, they perhaps should be excluded from this table. In Suzhou the item 跌 pronounced with a voiceless unaspirated alveolar stop and 挺艇 both with a voiceless aspirated alveolar stop might not have been derived from the voiced alveolar stop. The words 菌 and 窘 both with a voiceless palatal affricate appeared in the first edition of the *Hanyu Fangyin Zihui* but have been deleted in the second edition. If we omit these five items from consideration, then regarding the evolution of the Middle Chinese voiced stops, Beijing and Suzhou do not share any items. They are entirely dissimilar.

The total dissimilarity here is obvious by inspection of the disjunctive occurrence of the items. But when the items involved are numerous and the occurrence patterns are complex, we need to have a formula to calculate the degree of similarity. Similarity measurements are mostly based on the ratio of shared items to the total number of items considered. The "total number of items considered" is somewhat tricky. As we compare several dialects, say dialects A, B, C, and D at the same time, the items that occur in dialect C or D but do not occur in dialects A and B, might be counted in the total number of items considered when we compare dialects A and B. Ma (1989), Tu and Cheng (1991), Wang and Shen (1992), and Tu (1994) have reviewed various correlation methods and have pointed out such inflation of coefficient values in Cheng (1982). Now it seems that we have come to favor Jaccard's coefficient, which excludes the non-occurring items in the computation:

(5) $a / (a + b + c)$

where a: number of items shared by both dialects

b: number of items occurring in one dialect only

c: number of items occurring in the other dialect only.

The calculation of similarity based on the numbers given in (4) for the effects of the change of the Middle Chinese voiced stops is either (6a) if we exclude or (6b) if we include those five items:

(6) a. $0 / (0 + 244 + 250) = 0$

b. $5 / (5 + 244 + 250) = 0.010$

By definition, this similarity index ranges from 0 to 1. Thus the historical devoicing rule contributes no or extremely small value of similarity between Beijing and Suzhou. An overall similarity comparison will have to take consider more cases. In Cheng (1991) 3,373 cases of initials, finals, and tones were used to calculate a phonological similarity matrix for 17 Chinese dialects. In the literature, presentation of the number of instances attesting to historical correspondences is quite common. For example, just to be critical of ourselves, Cheng and Wang (1971), Chen (1976), and Wang and Cheng (1987) have extensive lists of numbers variously showing correspondences for initials, finals, and tones between Middle Chinese and modern dialects. But those numbers are simply numbers of instances; no principled ways of synthesis are given in those studies. Here in this paper we are using devoicing as an example to show how to quantify rule effects.

The use of the DOC database for quantification of similarity, affinity, and mutual intelligibility deserves some comments. The items in the database were collected from the first edition of the *Hanyu Fangyin Zihui* and partially updated on the basis of the second edition. The *Hanyu Fangyin Zihui* contains phonological information for over 27,00 common words. Those words were not selected according to some sampling principles. Consequently one could question the validity of the data as a fair sample for prediction of the nature of the dialects. Selection of linguistic data for quantification has always been a substantive as well as methodological issue. The "basic" lexicon in glottochronology limiting the size to a couple hundred items would not be a good representative for our purposes. We maintain that the larger lexicon of the *Hanyu Fangyin Zihui* would allow us to make various sorts of inquiries. Much as we wish to claim the predictive power of our quantification, a moderate view of taking this research as a population study of this particular collection of data would help us jump over the hurdle of statistical sampling and allow us to venture into different modes of linguistic inquiry.

3. Rule Effects on Dialect Mutual Intelligibility

Since Middle Chinese, historical rules have changed linguistic entities and patterns of the speech in various regions. Deterioration and enhancement of dialect mutual intelligibility are the most obvious effects of the rules such as those given earlier in (2). Mutual intelligibility, in spite of its vague definition in the past, has been used as a criterion for language subgrouping by linguists. Social scientists and non-professionals often demand a definitive answer from linguists to their questions about mutual intelligibility. We have poked around for years; it is time for us to try to answer this challenge. The motivation, weight assignments of characteristics, and procedural details for calculating mutual intelligibility have been presented in Cheng (1992, 1994). In essence, we take the view that human pattern cognition is based on observation of repeated phenomena. That is, repetition lends its weight of numbers to pattern formation. In dialect communication, the recurrence of corresponding elements on the basis of cognates, such as Beijing initial p- to Jinan p- and Beijing n- to Jinan l-, forms correspondence patterns. Some correspondence patterns involve many members such as words while others contain only a small number of entities. It is therefore useful to divide patterns into major and minor ones. Major patterns give a sense of regularity and therefore are considered as communication enhancing signal. On the other hand, minor patterns are exceptions and can act as interfering noise.

Intuitively we feel that between a pair of dialects, say A and B, the intelligibility of dialect B for dialect A may not be identical to that of dialect A for dialect B. Hence we use the term "source dialect" and "target dialect" to refer to the way corresponding patterns are established. First we set up the patterns according to the elements in dialect A. We then calculate the one-way unidirectional intelligibility value. Then we collect the correspondence patterns according to the elements in dialect B and calculate the intelligibility. This differentiation thus recognizes the needs to derive unidirectional intelligibility as the first step of the calculation of mutual intelligibility. We take the mean of the two unidirectional intelligibility degrees to be the mutual intelligibility of the two dialects. A crucial issue of the calculation is the determination of importance or weight of various correspondence patterns. We have established a weight scale in Cheng (1992, 1994). The scale using a unitary 1 as the full value takes into account the type of correspondence patterns (signal or noise) and the nature of the corresponding items (same or different). When the dialects have the same items in a major pattern, the intelligibility is the highest, for example, Beijing p- corresponding to Jinan p-. If the target-dialect element is different from that of the source dialect and that element occurs elsewhere in non-cognate items in the source dialect, then the confusability is the highest. For example, the correspondence of Jinan l- to Beijing n- involving a single item might allow Beijing to wrongly take that item as an item in Beijing l-. Other situations obtain more moderate values. The weight scale is as follows:

(7)

			Signal	Noise
For each item in a pattern, the target-dialect				
a.	element is the same as that of the source dialect:		1.00	-0.25
b.	element is different from that of the source dialect			
	i.	and does not occur in the source dialect:	0.50	-0.50
	ii.	and occurs elsewhere in the source dialect:	0.25	-1.00

In (2) we list the dialect subgrouping criteria concerning initials. In order to discuss some of them to show rule effects, we need to give proper weight to initial consonants. Since we use cognate syllable-words to establish correspondence patterns, we may assign one-fifth of the unitary value 1 to each of the five traditional segments of initial, medial, nuclear vowel, ending, and tone. This weight scale for initials is the following:

(8)

			Signal	Noise
For each item in a pattern, the target-dialect's phonological				
a.	element is the same as that of the source dialect:		0.20	-0.05
b.	element is different from that of the source dialect			
	i.	and does not occur in the source dialect:	0.10	-0.10
	ii.	and occurs elsewhere in the source dialect:	0.05	-0.20

Now let us examine how the devoicing rule affects the mutual intelligibility between Beijing and Suzhou as an example to show rule effects. First, patterns of sound correspondence on the basis of cognate words have to be established. We will use Beijing as the source dialect and Suzhou as the target dialect to inspect one-way intelligibility. Let us start with the bilabial. The Middle Chinese voiced bilabial stop has changed into voiceless unaspirated stops in Oblique tones. This is part of the generalization we made earlier concerning the devoicing rule in Beijing. However, the p- initial from Middle Chinese p- has remained unchanged in both Beijing and Suzhou. The Beijing p- therefore corresponds to Suzhou b- and p-. Thus, one effect of the devoicing is the merger of the earlier p-b distinction within Beijing and the creation of p:b and p:p correspondence patterns between Beijing and Suzhou. Following are the patterns showing the voiceless-voiced correspondence containing 41 items and the voiceless-voiceless correspondence having 93 items of cognate words in our DOC database.

(9)	a.	p : b		41
	b.	p : p		93

From the point of view of Beijing p-, the correspondence patterns have a mean of 67 ((41 + 93) /2). The p:b pattern with 41 items is less than the mean. Therefore this is a minor pattern and is considered noise, interfering with intelligibility. Since the initial b- does not appear in Beijing, the unit value is -0.10 according to the weight scale. The 41 items yield a value of -4.10. The p:p pattern with identical initials has a frequency greater than the mean, and therefore it is considered communication enhancing signal. Its unit weight is 0.20 and its value is 93*0.20=18.60. So regarding Beijing p-, one pattern contributes negatively and the other positively to intelligibility. To show the cumulative effects, we add "noise" and "signal" columns below. The values in these two columns will accumulate as we proceed to show other patterns. At the end of the calculation, we will see the cumulative values as the numerical effects of the devoicing rule.

(10)			frequency	mean	weight	value	noise	signal
	a.	p : b	41	67.0	-0.10	-4.10	-4.10	
	b.	p : p	93	67.0	0.20	18.60		18.60

As said before, the devoicing for words in Even tone has produced voiceless aspirated stops. We need to inspect the Beijing-Suzhou correspondence patterns for Beijing pʰ-. The frequency, mean, weight, value, and cumulative sums of noise and signal in that order are given below:

(11)			frequency	mean	weight	value	noise	signal
	a.	pʰ : b	44	30.6	0.10	4.40		23.00
	b.	pʰ : p	4	30.6	-0.20	-0.80	-4.90	
	c.	pʰ : pʰ	44	30.6	0.20	8.80		31.80

This time the weight for the pʰ:b pattern is 0.10 because its occurrence is greater than the mean but the initials are different. The 4 items of the pʰ:p correspondence are irregular in two respects. First the irregularity may be due to the informant's idiosyncratic speech. For example, 品, one of the 4 items, was given with p- in Suzhou in the first edition of the

Hanyu Fangyin Zihui and with pʰ- in the second edition. Another cause of this odd correspondence might be due to irregular change. For example the word 譜 somehow acquired aspiration in many dialects except Suzhou and Wenzhou. Fortunately the frequency is too small to skew the figure drastically. The assignment of weight and the derivation of the value for the pʰ:pʰ pattern are straightforward. The noise and signal values are cumulative from those given in (10).

Earlier we showed that 埠 had two readings with f- in Beijing. It has a b- initial in Suzhou. In Suzhou the initial of the word 孵 somehow has changed from a Middle Chinese fricative to b-. Thus we found Beijing f- corresponds to Suzhou b- with 3 items. The correspondence patterns for Beijing f- and their numerical values are give below:

(12)		frequency	mean	weight	value	noise	signal
a.	f : b	3	32.6	-0.10	-0.30	-5.20	
b.	f : f	57	32.6	0.20	11.40		43.20
c.	f : v	38	32.6	0.10	3.80		47.00

The avid reader will question the inconsistency of the numbers given so far. In (4) we show that Suzhou has 82 items with b- initials derived from Middle Chinese b-. And yet here we show 88 (41 + 44 + 3) items with b- in Suzhou. The difference is due to the fact that we are looking at slightly different matters here. In (4) we give the historical origin. In (10), (11), and (12) we show the modern b- initials irrespective of their history. The occurrence of 88, then, means that the initials of six words have changed from voiceless to voiced. As an example, one of these words is 爆, which had the voiceless unaspirated bilabial stop in Middle Chinese.

So far we have accumulated 47.00 positive and -5.20 negative points for the effects of the devoicing rule. The numbers have to be interpreted in the context of all the phonological correspondence patterns between Beijing and Suzhou. To anticipate the results, we should say that there were 2,916 syllable-words in the database in the Beijing-Suzhou case. Since in the weight scale we assign 1 unit value to each syllable, by definition the maximum sum of noise and signal is 2,916 in this case. We may call the sum value of signal enhancement and noise deduction the "signal-noise value". The signal-noise value will be less than the maximum, unless the two dialects are identical in every respect, in which case the value would be the same as the number of syllables. The normalized unidirectional intelligibility index is obtained by dividing the cumulative signal-noise value by the total number of elements involved, in this case the elements being syllables.

Up to this point, the signal-noise value is 41.8 (47 - 5.20). To continue the investigation of the effects of the devoicing rule, we need to examine the signal-noise values of all the patterns that involve the modern initials as listed under Beijing in (4). Besides p, pʰ and f, whose correspondence patterns have been tabulated above, we will quantify the signal-noise values of the patterns for Beijing initials t, tʰ, k, kʰ, tɕ, and tɕʰ below without comments on exception or irregular items.

(13)		frequency	mean	weight	value	noise	signal
a.	t : d	58	46.6	0.10	5.80		52.80
b.	t : t	81	46.6	0.20	16.20		69.00
c.	t : tʰ	1	46.6	-0.20	-0.20	-5.40	

(14)		frequency	mean	weight	value	noise	signal
a.	tʰ : d	53	59.0	-0.10	-5.30	-10.70	
b.	tʰ : tʰ	65	59.0	0.20	13.00		82.00

(15)		frequency	mean	weight	value	noise	signal
a.	k : dʑ	2	34.5	-0.10	-0.20	-10.90	
b.	k : g	4	34.5	-0.10	-0.40	-11.30	
c.	k : k	129	34.5	0.20	25.80		107.80
d.	k : tɕ	3	34.5	-0.20	-0.60	-11.90	

(16)		frequency	mean	weight	value	noise	signal
a.	kʰ : g	4	15.2	-0.10	-0.40	-12.30	
b.	kʰ : h	1	15.2	-0.10	-0.10	-12.40	
c.	kʰ : k	3	15.2	-0.20	-0.60	-13.00	
d.	kʰ : kʰ	67	15.2	0.20	13.40		121.20
e.	kʰ : tɕʰ	1	15.2	-0.20	-0.20	-13.20	

(17)		frequency	mean	weight	value	noise	signal
a.	tɕ : ɕ	1	33.3	-0.20	-0.20	-13.40	
b.	tɕ : dʑ	25	33.3	0.10	-2.50	-15.90	
c.	tɕ : h	1	33.3	-0.10	-0.10	-16.00	
d.	tɕ : k	42	33.3	0.05	2.10		123.30
e.	tɕ : tɕ	146	33.3	0.20	29.20		152.50
f.	tɕ : ts	37	33.3	0.05	1.85		154.35
g.	tɕ : tsʰ	1	33.3	-0.20	-0.20	-16.20	
h.	tɕ : z	14	33.3	-0.10	-1.40	-17.60	

(18)		frequency	mean	weight	value	noise	signal
a.	tɕʰ : dʑ	28	16.2	0.10	2.80		157.15
b.	tɕʰ : g	1	16.2	-0.10	-0.10	-17.70	
c.	tɕʰ : kʰ	7	16.2	-0.20	-1.40	-19.10	
d.	tɕʰ : tɕ	3	16.2	-0.20	-0.60	-19.70	
e.	tɕʰ : tɕʰ	34	16.2	0.20	6.80		163.95
f.	tɕʰ : tsʰ	28	16.2	0.05	1.40		165.35
g.	tɕʰ : z	13	16.2	-0.10	-1.30	-21.00	

At this point we have completed the tabulation of the correspondence patterns of the initials involved in the devoicing rule. Thus the positive contribution of the devoicing rule is 165.35 and its negative contribution is -21.00. The signal-noise value is therefore 144.35 (165.35-21.00). As said before, the numbers have to be interpreted in the context of all the phonological correspondence patterns between Beijing and Suzhou. There were 2,916 syllable-words in the database, and by definition the maximum sum of the signal-noise value is 2,916. We have tabulated all the phonological correspondence patterns including the ones given above. The sum of positive and negative values is 1486.35. The one-way intelligibility index for Beijing-Suzhou is 0.510 (1486.35 / 2916). Out of 1486.35 the devoicing rule contributes 144.35. This value is about 10% (144.35 / 1486.35 = 0.097) of the total.

4. Numerical Measurement as Synthesis

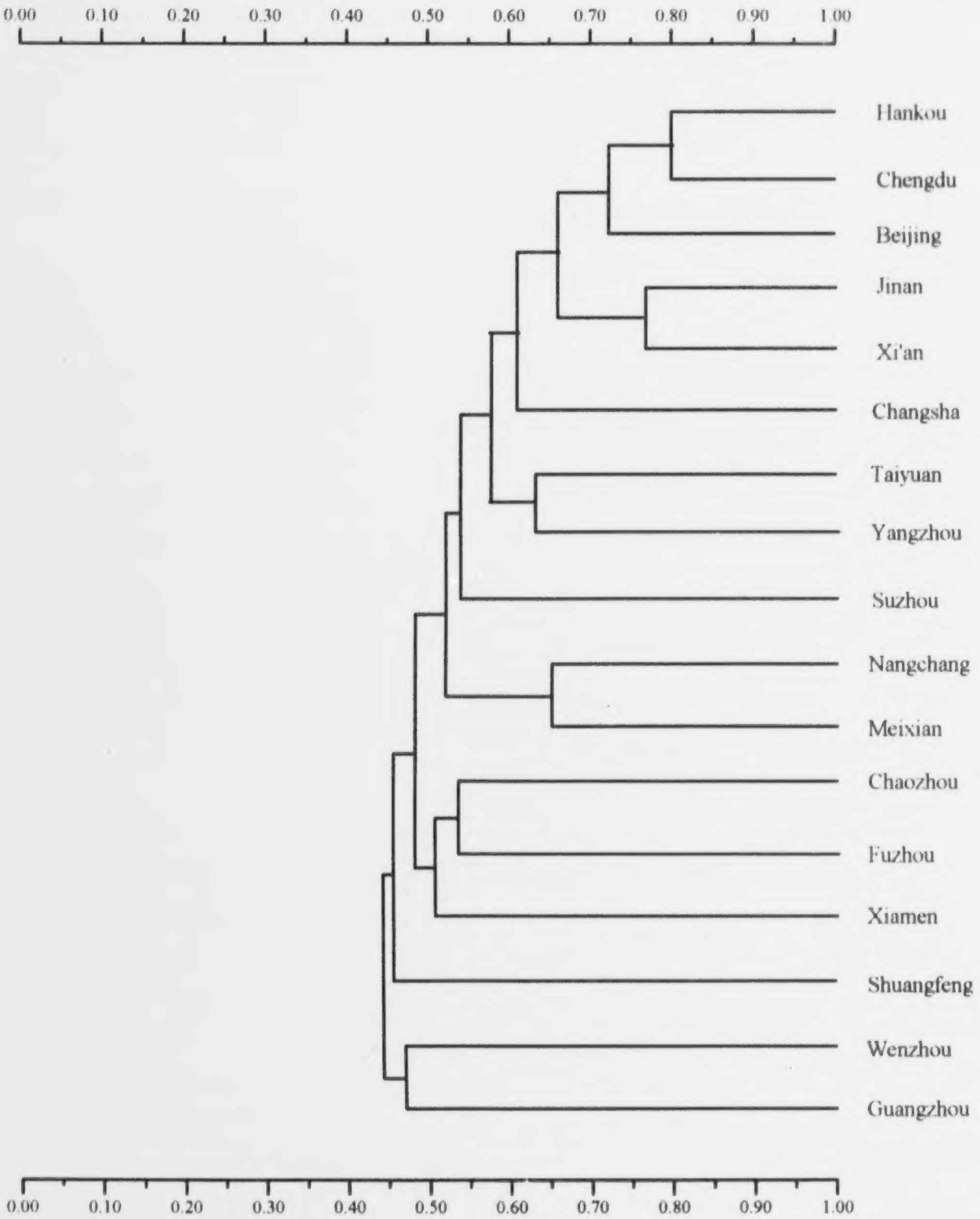
With our similarity measurements, the devoicing rule makes Beijing and Suzhou entirely dissimilar. In terms of mutual intelligibility, the effects participate in contributing about 10% of the communication enhancing value. This seeming contradiction arises because when we talk about correspondence patterns we include those elements that were produced by the rule as well as those outside of its application. Moreover, our mutual intelligibility measurement does not require identical corresponding elements to enhance communication. As long as a pattern has more than the mean number of elements, it becomes a regular correspondence. A regular correspondence pattern enhances communication. That is how we can understand other dialects and speech with a foreign accent. The t:d pattern given above, in spite of its differing elements, is considered signal and contributes a positive value of 5.8. The same positive effect can be said of the pʰ:b correspondence. On the other hand the p:b and tʰ:d patterns contribute negatively as expected. The merger of initials has such complex consequences. We think numerical measurement is a way to represent the synthesis of various forces upon the dialects.

What does it mean to say that the Beijing-Suzhou unidirectional intelligibility is 0.510? Does it mean that half of the speech of Suzhou dialect can be understood by people from Beijing? As discussed in Cheng (1992, 1994), personal understanding of other dialects involves factors such as language background, experience in non-native environment, individual ability, etc. We call such mutual intelligibility "subjective mutual intelligibility". Here in this study we are looking at dialects as systems. The mutual intelligibility so calculated can be called "systemic mutual intelligibility". As speakers of a dialect, in spite of personal differences, are confined by or endowed with the dialect system, the calculation of subjective mutual intelligibility has to be based on systemic mutual intelligibility. However, we do not know exactly how to calculate subjective mutual intelligibility yet. To say that we have yet to crystalize measurement ideas would sound odd. But that is true at this initial stage of the quest for a quantitative synthesis of language similarity and mutual intelligibility.

For now, we will show in the Appendix the dialect subgrouping based on the calculated mutual intelligibility indices for all the 17 dialects represented in the *Hanyu*

Fangyin Zihui so that the Beijing-Suzhou values can be compared to the overall picture. The details of the procedure for arriving at the subgrouping can be found in Cheng (1992, 1994). Of relevance here is that the Beijing-Suzhou unidirectional intelligibility is 0.510 with Beijing as the source dialect and 0.489 with Suzhou as the source dialect. The mutual intelligibility is the mean value of 0.499. This value can be compared with the highest intelligibility pair of Hankou and Chengdu, having the mutual intelligibility of 0.795. The lowest intelligibility pair, Shuangfeng-Chaozhou, has a value of 0.353.

The numerical exercise above illustrates that rules are not isolated events. They may cause complex interactions in elements, which our conventional rule format cannot specify. Interests in rule effects have led us to relate rules to dialect similarity and mutual intelligibility. Are we rewriting rules in linguistics? That is for the reader to judge.



Appendix. Dialect Affinity Based on Mutual Intelligibility

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Cross-Linguistic Typological Variation, Grammatical Relations, and the Chinese Language

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1. Introduction

Probably most linguists would agree, in the abstract, that any approach to language analysis must pay due attention both to the similarities and to the differences among languages. However, when it comes to implementing this policy, we find substantial differences between the practice of different linguists, corresponding not only to differences among different schools, but also to differences within the same school at different times, and even to differences among individual linguists within the same school at the same time. At the one extreme, one might believe that all languages are essentially the same, with differences among languages, while of course there, not being particularly significant. The linguist who follows this line of argument will typically assume that whatever categories have proved necessary or useful in describing language A must also be present in language B. If they are not immediately apparent in language B, then they must be present in some more covert form. If they do not prove necessary, or even useful, in the analysis of language B, then this is not taken as evidence that they do not exist in language B; rather, this state of affairs is interpreted as an indication that the categories are present in language B, but are simply not made use by the grammar of language B. At the opposite extreme, one might assume that no category that is not immediately apparent in the structure of language B is necessarily absent from language B, following the slogan "if it seems not to be there, then it isn't there".

I believe that both of these extreme approaches are misguided. If we start out by assuming that the properties of language A are necessarily relevant for language B, and never ask ourselves what the justification for these properties might be internally to language B, then we can continue indefinitely holding to this belief, irrespective of whether or not this is the best analysis of language B. Thus if someone believes, on the basis of morphological case distinctions in Latin, that English has a covert distinction between dative (roughly, 'to') and ablative (roughly, 'from') cases, then I doubt if the English language will ever present him with any evidence that this analysis is wrong-headed. But there is a rather obvious alternative analysis that does much better justice to the facts of English, namely that English makes use of different prepositions, rather than different cases, to make this distinction. This is an important methodological point. Many linguists hold to the view within philosophy of science that a particular analysis is tenable until disproven. Unfortunately, with analyses that have no empirical consequences—like the alleged covert dative–ablative opposition in English—even a rather silly analysis will never be disproven. I have deliberately chosen a "silly" analysis to make a clear point, although in what follows I will note some instances that are quite parallel although not so obviously wrong-headed.

Let me give a more subtle example that may illustrate the same phenomenon, and which involves a contrast between English and Chinese.[1] In English, there are good reasons for distinguishing syntactically between the two kinds of adnominal clauses found in (1) and (2):

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[1] I originally developed this particular argument using the contrast between English and Japanese, although in this particular respect Chinese and Japanese seem to have essentially the same property, in contrast to English; a written version of the original argument is currently under

(1) the opinion that I put forward
(2) the opinion that they should go to America to study medicine

Sentence (1) is a relative clause, while (2) is a complement clause with a nominal head. The syntactic differences between the two constructions can easily be demonstrated. In (1), *that* can be replaced by *which*, as part of the usual rule whereby a relative clause can be introduced by the relative pronoun *who* or *which*, depending on the animacy of the head noun, as in (3); this is not possible in (2), whence the ungrammaticality of (4):

(3) the opinion which I put forward
(4) *the opinion which they should go to America to study medicine

If we compare the relative clause in (3) with the closest corresponding simple sentence, then we see that this simple sentence requires an noun phrase in the direct object position after the verb *put forward* (as in (5)); this in keeping with the analysis of both traditional and more recent grammatical studies whereby, depending on details of the analysis, the relative pronoun in (3) is, in some sense, the direct object of the verb *put forward*, or the relative clause contains a gap corresponding to the direct object position.

(5) I put forward the opinion.

In (4), by contrast, there is no gap; the subordinate clause, minus the conjunction, is a perfectly well-formed sentence in isolation; there is no possibility of inserting a noun phrase into this clause that would correspond to the *that* of (2):

(6) They should go to America to study medicine.

What about the corresponding constructions in Chinese, as in (7)–(8)?[2]

(7) wǒ tíchūlái-de yìjiàn
I put.forward-PTCL opinion

(8) tāmen qù Měiguó xué yī-de yìjiàn
they go America study medicine-PTCL opinion

In Chinese, there is no obvious difference between the two sentence types. In both cases, we have a head noun which is preceded by a clause, the two being linked by means of the particle *de*. Moreover, given that Chinese has the phenomenon of null-anaphora (zero-anaphora), it is at least harder to justify an analysis whereby there is a gap in (7), contrasting with the absence of a gap in (8). Finally, the construction with a nominal head as (8) is not how clausal complementation with a verbal head is done in Chinese—the latter involves no particle, and the subordinate clause follows rather than precedes the main clause, as in (9); thus, Chinese lacks

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preparation for a publication of the European Science Foundation Programme in Language Typology (EUROTYP). Except where otherwise specified, I will use “Chinese” as an abbreviation for “Mandarin Chinese”, or rather, even more specifically, “Modern Standard (Mandarin) Chinese”.

[2] The following abbreviations are used: ABL—ablative, ACC—accusative, ASP—aspect, CL—classifier, DAT—dative, DO—direct object, GEN—genitive, LOC—locative, M—masculine, NOM—nominative, PASS—passive, PL—plural, PRS—present, PTCL—particle, SG—singular, TOP—topic.

the parallelism between the nominal-head construction and the verbal-head construction that is found in English.

(9) Tā tíyì wǒmen dōu qù chī jiǎozi.
he suggest we all go eat dumpling
'He suggests that we all go and eat dumplings.'

Nonetheless, most recent discussions of such Chinese constructions with which I am familiar—and I can only lament the fact that, given my own limitations, this necessarily excludes discussions in Chinese—make the assumption that Chinese has distinct constructions of relative clause and complement clause with a nominal head.[3] However, an alternative analysis is at least plausible, namely that in both (7) and (8) one has the same syntactic construction, simply a head noun with a modifying clause; what the speaker of Chinese then does is to assign a plausible interpretation to this structure, which in the case of (7) leads to the "relative-clause" interpretation, in the case of (8) to the "complement clause" interpretation—thus there is no need to posit any syntactic difference between the two types. Of course, before adopting this analysis it would be necessary to test its consequences. But the point I want to make is not to argue that either the "two-constructions" or the "one-construction" analysis is the correct analysis for these examples in Chinese. Rather, I want to suggest that because a particular distinction is made in English, this distinction has been carried over into the analysis of Chinese, without stopping to ask whether this distinction is really justifiable, indeed without stopping to ask whether the distinction as applied to Chinese may not actually lose a significant generalization concerning the structure of that language.

On the other hand, assuming that we can only justifiably make use of categories that are clearly overt in a particular language can equally lead to missed insights. For instance, in many languages, in particular several older or more archaic European languages, one of the most obvious criteria for grammatical relations, such as the distinction between subject and direct object,[4] is morphological case. English for the most part lacks morphological case. However, this does not mean that English lacks grammatical relations, since, as I will illustrate in section 2, English has a number of surprisingly robust criteria for identifying subjects; it just so happens that morphological case plays a minor role in this identification.

2. A Latin Grammarian Looks at English

In this section, I want to imagine the case of a Latin grammarian—a linguist who is both a native speaker of Latin and a scholar of the Latin language—who turns to examining modern English. This is, needless to say, a chronological impossibility, but is nonetheless insightful as a "thought experiment", especially insofar as it contrast the structures of two of the most thoroughly investigated of the world's languages. Let us suppose that our Latin grammarian is particularly interested in grammatical relations.

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[3] Many readers will no doubt recognize these Chinese sentences as taken from Li and Thompson (1981: 586–587). Interestingly, although Li and Thompson in general do not adopt the view that the linguistic structure of Chinese has to be analyzed in the same way as that of English, in their discussion of these examples they do insist on the distinction between the two kinds of construction in Chinese. However, the criteria they give are semantic, so their analysis is still consistent with the view that there is no syntactic difference between the two sentence-types.

[4] In presenting arguments below, I will often use the terms "subject" and "direct object" not only in the strict sense where their identification has been jusified in the language or construction at issue, but also more informally where my interest is in arguing whether or not these grammatical relations are justifiable, and where a more strict terminology might use "putative subject" and "putative direct object".

In Latin, an obvious criterion for subjects and direct objects, which works in the vast majority of instances, in particular in finite clauses, is case marking: Subjects stand in the nominative case, while direct objects stand in the accusative case, as in (10):

(10) Marcus Titum ferit.
Marcus.NOM Titus.ACC hit-PRS.3SG
'Marcus hits Titus.'

Indeed, the identification of grammatical relations by means of cases is so strong in Latin that it overrides other considerations, such as word order, so that (11) has the same basic meaning as (10), while to express the idea of Titus hitting Marcus it is necessary to change the cases, again irrespective of word order:

(11) Titum Marcus ferit.
Titus.ACC Marcus.NOM hit.PRS.3SG
'Marcus hits Titus.'

(12) Titus Marcum ferit.
Titus.NOM Marcus.ACC kill.PRS.3SG
'Titus hits Marcus.'

One of the first things that strikes our Latin grammarian is that in the English translation equivalents of these sentences, there are no morphological case differences between the noun phrases *Marcus* and *Titus*, whether they stand as translation equivalents of a Latin nominative or of a Latin accusative. What conclusions might our grammarian draw from this typological difference between the two languages? There are at least two initial reactions that he might have. The first is to conclude that English "really" does have the morphological distinction between the two cases that is found in Latin, and therefore the difference between the two grammatical relations of subject and direct object, but that this distinction in English is "covert". The second is to conclude that English lacks the most salient distinction found in Latin between subject and direct object, namely case marking, and therefore also lacks the distinction between subject and direct object, if indeed it does not lack grammatical relations altogether. In section 1 I mentioned briefly an example, that of adnominal clauses, where the lack of an opposition found in one language (English) but not in other (Chinese) has arguably led linguists to misanalyze Chinese by transferring the English distinction to Chinese. In the Latin–English comparative example, I will be arguing almost the inverse, namely that English does have the distinction between subject and direct object found in Latin, although its manifestation is somewhat different, and indeed some of the details of the assignment of grammatical relations are also different between the two languages. Thus, it is necessary to examine each individual language carefully before concluding that distinctions valid in some other language are or are not valid in the language now under investigation.

Let us therefore follow our Latin grammarian as he finds out more about English. The data are, of course, not new, but it is important for our own learning experience to imagine ourselves following in the footsteps of the Latin grammarian. The English data that follow are introduced not in order to establish new generalizations about English, but rather to illustrate a methodological point.[5]

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[5] The relevant sections of Postal (1974) constitute a useful checklist of subject properties in English, although some of the properties alluded must necessarily be examined against the background of the author's theoretical commitment at the time and of the particular argument he

The Latin grammarian will soon notice that most personal pronouns in English, in contrast to non-pronominal noun phrases, do show a distinction in form between subject and direct object, as in (13) and (14):

(13) I hit him.
(14) He hits me.

The distinction is very similar to the case distinction found in Latin with the majority of noun phrases, although there are some differences, for instance in that the Latin accusative *me* 'me' contrasts with other non-nominative cases, such as dative *mihi* 'to me', whereas English only has the binary distinction *I—me*. But at least the case distinction does allow us to identify pronominal subjects unequivocally in terms of their morphological form. Our Latin grammarian will notice that in English, as in Latin, the grammatical relation of subject does not correspond to any single semantic role, so that generalizations made about subjects cannot be readily replaced by statements about semantic roles; good evidence for this is provided by the nominative subject–patient in passive sentences like (15):

(15) I am hit by him.

The Latin grammarian, here even thinking on the basis of his own analysis of his native language, will recall that verb agreement is also a good criterion for subjects in Latin, at least in finite clauses, where verbs agree in person and number with their subject, and with no other noun phrase. (Latin non-finite verb forms do not show any person–number agreement.) Although English verb morphology is much reduced in comparison with that of Latin, where English does have distinct person–number forms of verbs, they show agreement with the subject and only with the subject, including subjects expressing different semantic roles, including in particular subjects of passive sentences. Thus, in (14) the verb form *hits* unequivocally shows third person singular agreement, i.e. it agrees with the subject *he* and does not agree with the first person singular direct object. Likewise, in (15) the verb *am* clearly shows agreement with the subject–patient *I*.

As our Latin grammarian becomes more familiar with English and its structure, he will, at least with some degree of perseverance and insight, uncover other, much more surprising criteria that enable one to identify subjects in English. For instance, Quantifier Float is the name given to the construction illustrated by (17) in relation to (16). In (17), as in (16), the quantifier *both* must refer to the boys, and cannot refer to the bikes; in other words, in both versions there is necessarily reference to two and only two boys, whereas the number of bikes is unspecified (except that, the noun phrase being plural, reference must be to more than one bike).

(16) Both of the boys soon found the bikes.
(17) The boys soon both found the bikes.

The judgments of native speakers of English are quite unequivocal on such sentences, which thus provide a robust but nonetheless subtle, by no means obvious test for subjecthood—it is a test which, moreover, does not work for all languages, Chinese, for example, lacking this particular constraint with quantifiers such as *dōu* 'all'. As with the criteria mentioned earlier, we also observe that the possibility of Quantifier Float applies to subjects whatever their semantic

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was expounding. One of the main contributions of Relational Grammar, as illustrated for instance in Perlmutter (1983), Perlmutter and Rosen (1984), and Postal and Joseph (1990), especially methodologically, has been its emphasis on the importance of uncovering criteria for the establishment of grammatical relations. For further exemplification of my own work in this area, reference may be made to Comrie (1989), and references cited there.

role, including patient–subjects of passive clauses: In (18), in contrast to (17), it is the bikes that must number exactly two, whereas the number of boys is unspecified beyond 'more than one', i.e. (18) has the same basic meaning as (19):

(18) The bikes were both found by the boys.
(19) Both of the bikes were found by the boys.

Another subtle example of this kind is provided by constructions like (20) in relation to (21), constructions that some linguists have called Subject-to-Object-Raising, although this term may seem to imply an analysis that other linguists reject—I will use it here as a neutral label for the construction in question.

(20) I believe him to have hit them.
(21) I believe that he has hit them.

The important point about the construction in (20) is that after certain main-clause verbs, including *believe*, it is possible to have a following noun phrase (in the non-nominative if pronominal) followed in turn by an infinitive, such that the non-nominative noun phrase corresponds to the subject of the equivalent *that* clause. Crucially, one cannot start from an example like (21) and create a sentence parallel to (20) in which a non-subject, say the direct object, shows up in this position, as is shown by the ungrammaticality of (22):

(22) *I believe them he/him to have hit.

Once again, the corresponding passive versions (of the subordinate clause) show that the relevant notion of subject is independent of semantic roles:

(23) I believe them to have been hit by him.
(24) I believe that they have been hit by him.

Have we therefore reached the conclusion that grammatical relations are identical in English and Latin? Not quite. Although it is in general the case that a Latin subject will correspond to the subject of its English translation equivalent and vice versa, there are nonetheless some exceptions, and our Latin grammarian will need to note them. For instance, English allows all four of (25)–(27), with agent (in (25)), patient (in (26)), or recipient (in (27)) of the verb *give* as subject. Latin, by contrast, has translation equivalents with parallel grammatical relations only for the first two.

(25a) The man gave the books to me.
(25b) The man gave me the books.
(26) The books were given to me by the man.
(27) I was given the books by the man.

(28)	Vir	mihi	libros	dedit.
	man.NOM	I.DAT	book.PL.ACC	give.PAST.3SG
	'The man gave the books to me.'			

(29) Libri mihi a viro dati sunt.[6]
book.PL.NOM I.DAT by man.ABL given.M.PL be.PRS.3PL
'The books were given to me by the man.'

(30) *Ego libros a viro datus sum.
I.NOM book.PL.ACC by man.ABL given.M.SG be.PRS.1SG

This last set of examples may raise a question in the reader's mind: If there is not exact correspondence between subjects in English and Latin translation equivalents, are we still justified in using the same term in referring to the relevant grammatical relations in these two languages? My view on this remains as expressed in Comrie (1989). In order to identify a particular grammatical relation in a particular language, we must have grammatical criteria that are valid internally to that language. In order to identify grammatical relations cross-linguistically, there must be substantial overlap between the occurrences of the same grammatical relation in translation equivalents across the two languages. As with other aspects of grammatical structure, we are unlikely to find exact identity across all translation equivalents in a pair of languages, but we must find a substantial overlap, as indeed we do in comparing English and Latin. It is against this background that I will approach the question of grammatical relations in Chinese in section 3.

3. Some Thoughts on Grammatical Relations in Chinese

I now turn to a discussion of the relevance of these remarks to the analysis of Chinese, in particular Mandarin. I do so with some trepidation: I am not a specialist in Chinese, and am therefore dependent for the most part on secondary data, as indicated in the acknowledgments in the following text, in addition to which I have used Li and Thompson (1981) as a basic reference source. What follows should therefore not be taken as a definitive statement, or even as my definitive statement, about the relevant aspects of Chinese syntax. Rather, on the basis of observations that others have made concerning the syntactic structure of Chinese, I will try to place Chinese within the methodological framework that has been outlined in the earlier part of this article.

At first sight, Chinese presents an even more daunting picture than English did to our Latin grammarian. In English, at least most personal pronouns have enough case marking to distinguish between subjects and direct objects, but in Chinese this is not the case:

(31) Tā dǎ wǒ.
he hit I
'He hits me.'

(32) Wǒ dǎ tā.
I hit he
'I hit him.'

In English, word order provides a good test for subjects, despite the possible slight variation in word order of major constituents of the clause, but in Chinese again the situation is less clear. Thus, in addition to the SVO word order of (33), we also find the OSV word order of (34), and even the SOV word order of (35), with the result that NP NP V sequences are potentially ambiguous in Chinese:

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[6] In this Latin passive clause, in the past tense (more specifically, the so-called perfect tense–aspect), the verbal complex is composed of the past passive participle of the lexical verb, agreeing in gender–number with the subject, and the present tense of the auxiliary verb 'to be', agreeing in person–number with the subject.

(33) Wŏ mǎi shū-le.
I buy book-ASP
'I bought the book.'

(34) Shū wŏ mǎi-le.
book I buy-ASP

(35) Wŏ shū mǎi-le.
I book buy-ASP

It is therefore not surprising that we find extreme discrepancies in the attitudes of different linguists in their attitude towards the analysis of Chinese, ranging from those on the one hand who argue that the various syntactic distinctions that are overt in English or Latin are present in Chinese, only in covert form, to those who argue that the syntax of Chinese must be organized on completely different principles—or even that Chinese has no syntax, its apparent syntactic properties being in fact pragmatic. If we restrict ourselves more narrowly to the question of grammatical relations, Chinese provides a particularly interesting test case: it lacks the blatantly obvious criteria presented by Latin, and even to a large extent by English; therefore, within the framework outlined above, the linguist analyzing Chinese is in the position of having to justify carefully any claims made about grammatical relations, as against the counter-claim that grammatical relations are simply irrelevant to the structure of Chinese.

An apparently straightforward sentence type will serve to introduce the problems and the kind of argumentation that can be brought to bear, namely the so-called double-object construction, as in the following example:

(36) Tā gĕi wŏ yì-bĕn shū.
he give I one-CL book
'He gives me a book.'

In this sentence, the verb *gĕi* 'give' is followed by two bare noun phrases. The question that arises is the following: Do these noun phrases differ from one another syntactically, in a way that is not directly predictable from their semantic roles (recipient and patient, respectively)? There are clearly differences between the two noun phrases. For instance, their order relative to one another is fixed, so that the following variant is impossible:

(37) *Tā gĕi yì-bĕn shū wŏ.
he give I one-CL book

It would be hard to argue that this order is determined by pragmatic factors, especially in face of the fact that other varieties of Chinese require the order of (37), as in Hakka example (38) (cited from Hashimoto 1973: 522), which requires the order with the patient preceding the recipient.[7]

(38) Gi^{2} bun^{2} jit^{5}-bun^{3} su^{1} ŋai^{2}.
he give one-CL book I
'He gives a book to me.'

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[7] In addition to (38), Hakka has another variant in which the verb 'give' is repeated before the recipient; but what is crucial for present purposes is that the version given in (38) is possible.

In other words, the fact that Mandarin has the order recipient–patient, while Hakka has the order patient-recipient, seem to be relatively arbitrary facts about these two varieties of Chinese, of a kind that would seem prima facie candidates for treatment as syntactic. However, a further possibility remains, namely that the distinction could be stated in semantic terms, as was indeed done informally above: One would simply specify that Mandarin requires the order recipient–patient, that Hakka requires the order patient–recipient, and that would be the end of the matter, with no need to refer to any independent notion of grammatical relation. I will leave the double-object construction for the moment, returning to it below in the context of grammatical relations and clause combining in Chinese.

In an important contribution to the debate on grammatical relations in Chinese, LaPolla (to appear) argues forcefully against the concepts of "subject" and "direct object" in Chinese. The kinds of arguments that he adduces can be divided into two classes. First, there are some criteria whereby putative subjects and direct objects not only do not differ syntactically from each other, but also do not differ from other noun phrases or adpositional phrases; for instance, relative clause formation in Chinese allows relative clauses to be formed where the head noun functions as subject, as direct object, or as some other argument or adjunct within the relative clause. Thus, at least the possibilities of relative clause formation do not provide any basis for differentiating between subject and direct object, or between these two together and other putative grammatical relations. Secondly, there are some criteria which, as LaPolla shows, fail to distinguish between putative subjects and direct objects, but where he does not explicitly note whether they distinguish between subjects and direct objects taken together and other major constituents of the clause. It is examples of this second kind that I want to concentrate on, in particular cross-clause coreference.

A simple pair of examples illustrating the possibilities, and taken from LaPolla (to appear), is given below:

(39) Nèi-ge rén bǎ xīguā$_i$ diào zài dìshàng,
that-CL man DO watermelon drop LOC ground
—$_i$ suì-le.
shatter-ASP
'That man dropped the watermelon$_i$ on the ground,
and it$_i$ burst.'

(40) Nèi-ge rén$_i$ bǎ xīguā diào zài dìshàng,
that-CL man DO watermelon drop LOC ground
—$_i$ huāng-le.
be.flustered-ASP
'That man$_i$ dropped the watermelon on the ground,
and he$_i$ was flustered.'

In Chinese, either the subject of the first clause, as in (39), or the direct object of the first clause, as in (40), can be the overt controller for a null-anaphor in the second clause in this construction, where the clauses are joined asyndetically, i.e. without any overt linker, and this construction therefore fails to distinguish between subject and direct object. The interpretations assigned are, of course, those that are pragmatically most plausible, since normally people do not burst and watermelons do not get flustered. But the crucial point is that there is no syntactic restriction differentiating between subject and direct object. Examples like those just cited are particularly significant when one compares them with the English translations, involving conjunction reduction. English requires that both overt controller and covert target have the same grammatical relation, or even more specifically that both be subject, so that while a null-anaphor is possible in (41) below, it is not possible in (42), or rather (42) can only be interpreted to mean, however counter-intuitively, that the man burst:

(41) That man$_i$ dropped the watermelon on the ground,
and —$_i$ was flustered.

(42) That man$_i$ dropped the watermelon$_j$ on the ground,
and —$_{i/*j}$ burst.

I have already introduced some notational conventions for representing certain aspects of cross-clause coreference, and it will be useful to make these explicit. For ease of presentation, each clause of a multi-clause sentence will be presented on a separate line, in both the original sentences and the English translations. The null-anaphor, or rather the position that would normally be filled in the second and subsequent clauses by the overt correspondent of the target noun phrase, will be represented by a long dash (—). Subscript letters will be used to indicate coreference (or, with an asterisk, the impossibility of coreference) between noun phrases and either other noun phrases or null-anaphor positions. These conventions are purely to illustrate more clearly the structure and meaning of the sentences in question, and no more significance than this should be attached to them. In Chinese sentences with asyndetically joined clauses, the clauses will be separated by a comma; in English translations, the comma will be retained, but where appropriate the conjunction *and* will be inserted, purely to produce more natural-sounding English sentences.

A detailed study of cross-clause coreference possibilities in asyndetically joined clauses is provided by Shi (1989); Shi refers to this construction as the "topic chain", although I will stick to the less specific term "asyndetically joined clauses". Like LaPolla, Shi notes that both subjects and direct objects can serve as controllers of null-anaphors, as in (43) (subject controller) and (44) (direct object controller):

(43) Zuótiān wǎnshàng tā$_i$ méi huíjiā,
yesterday evening he not return.home
—$_i$ zhùzài péngyou nàr,
stay friend there
—$_i$ jīnzǎo cái huílái.
this.morning only return
'Yesterday evening he$_i$ didn't return home,
he$_i$ stayed at his friend's,
and he$_i$ only returned this morning.'

(44) Wǒ kànshàng-le zhèi-ge gūniang$_i$,
I fall.in.love-ASP this-CL girl
tā yě kànshàng-le —$_i$,
he also fall.in.love-ASP
—$_i$ zuìhòu bèi tā qiǎngzǒu-le.
finally PASS he take.away-ASP
'I fell in love with this girl$_i$,
he also fell in love with her$_i$,
and finally she$_i$ was taken away by him.'

A further observation, not directly relevant to our current concerns but nonetheless of interest in this general connection, is that noun phrases that are overtly topicalized by being preposed can serve as controller irrespective of their grammatical or semantic relation. The distinction between topicalized and non-topicalized constituents is not so easy to test in the case of subjects, which are normally sentence-initial anyway, but with non-subjects the distinction is clear-cut. Thus, alongside (44) we have (45), with topicalization of the direct object controller:

(45) Zhèi-ge gūniang$_i$ wŏ kànshàng-le —$_i$,
this-CL girl I fall.in.love-ASP
tā yĕ kànshàng-le —$_i$,
he also fall.in.love-ASP
—$_i$ zuìhòu bèi tā qiăngzŏu-le.
finally PASS he take.away-ASP

(Note that I have extended the use of subscripted long dashes and pronouns to include indicating the positions that topicalized noun phrases would have occupied, had they not been topicalized.) The following example shows topicalization of the object of a preposition, which then serves as controller for a null-anaphor:

(46) Zhāngsān$_i$ a wŏ yìzhí duì tā$_i$ hĕn zūnjìng,
Zhangsan TOP I always towards he very respectful
—$_i$ duì wŏ què zŏngshì bùlĭbùcăi.
towards I yet always disregard
'As for Zhangsan$_i$, I am always very respectful towards him$_i$,
yet he$_i$ always disregards me.'

And finally, the controller can be a topicalized indirect object, as in:

(47) Lĭsì$_i$ ma wŏ gĕi-le tā$_i$ hăoduō yŏuyóng-de jiājù,
Lisi TOP I give-ASP he much useful-PTCL furniture
—$_i$ yĕ bù shuō shēng xièxie.
also not say CL thanks
'As for Lisi$_i$, I gave him$_i$ lots of useful furniture,
and he$_i$ didn't even say thank you.'

There are at least two alternative analyses that one might suggest at this point, in response to the data presented so far. The first is that the best characterization of the controller is simply that it is topic, irrespective of its grammatical relation, or more generally of its role in the first clause of the sequence. One would then have to argue, perhaps not implausibly, that the controller noun phrases in (43) and (44), though not preposed, are nonetheless interpreted as topics. However, there is evidence against this analysis. It is possible to have a controller that is an indefinite, clearly non-topical direct object, as in the following example, which could indeed be used to introduce the cat into the discourse for the first time:

(48) Wŏmen măi-le yì-zhī māo$_i$,
we buy-ASP one-CL cat
—$_i$ hĕn huì zhuō lăoshŭ,
very can catch mouse
dàjiā dōu xĭhuān tā$_i$.
everyone all like it
'We bought a cat$_i$,
it$_i$ is very good at catching mice,
everyone likes it$_i$.'

As one would expect, it is not possible to topicalize this indefinite direct object, even if it functions as the controller of a sequence of asyndetically joined clauses:

(49) *Yì-zhī mão wǒmen mǎi-le,
one-CL cat we buy-ASP
—$_i$ hěn huì zhuō lǎoshǔ,
very can catch mouse
dàjiā dōu xǐhuān tā$_i$.
everyone all like it

The second alternative would be to argue that any noun phrase can be controller of cross-clause coreference in a sequence of asyndetically joined clauses. Certainly, all the above examples show is that the various positions mentioned are possible positions for a controller, and no examples have been given so far to show that any position is impossible for a controller. (The ungrammaticality of (49) has nothing to do with controller positions in this construction, rather it illustrates restrictions on topicalizing noun phrases.) And one thing we have learned from the last few decades of syntactic research is that in order to understand the precise characterization of a grammatical construction, it is necessary not only to examine grammatical examples, but also to examine ungrammatical examples, since only by trying to draw the boundary between the two will we come to an understanding of the precise limits of the construction under investigation. It is therefore crucial to consider the kinds of examples adduced by Shi (1989) to show that some positions are not possible positions for controllers in this construction. In particular, objects of prepositions, if not overtly topicalized, are not possible controllers of null-anaphors in asyndetically joined clauses:

(50) *Wǒ yìzhí duì Zhāngsān hěn zūnjìng,
I always towards Zhangsan very respectful
—$_i$ duì wǒ què zǒngshì bùlǐbùcǎi.
towards I yet always disregard
'I am always very respectful towards Zhangsan$_i$,
yet he$_i$ always disregards me.'

Nor is the indirect object in the double-object construction:

(51) *Wǒ gěi-le Lǐsì hǎoduō yǒuyóng-de jiàjù,
I give-ASP Lisi much useful-PTCL furniture
—$_i$ yě bù shuō shēng xièxie.
also not say CL thanks
'I gave Lisi$_i$ lots of useful furniture,
and he$_i$ didn't even say thank you.'

This last example is particularly telling, in relation to our earlier rather inconclusive discussion of the double-object construction, because here we have a distinction between the direct object (patient) and indirect object (recipient) of this construction, but one where we do not need to, and indeed arguably should not, refer specifically to the patient, but rather need to subsume this under a larger class that includes subjects and direct objects (henceforth: **direct grammatical relations**). Thus, the distinction between the two objects in the double-object construction turns out to coincide with a major dividing line between grammatical relations in Chinese.

The generalizations illustrated by the examples above can be summarized by the following two-part statement:

(52) The controller of a null-anaphor in a sequence of asyndetically joined clauses can be
(i) a noun phrase that is topic of the initial clause;
(ii) a noun phrase that occupies a direct grammatical relation (subject or direct object) of the initial clause.

Notice that, in keeping with LaPolla's generalization concerning subjects and direct objects in Chinese, we have so far provided no evidence for drawing a dividing line between subjects and direct objects. Rather, the evidence presented so far suggests a single grammatical relation of "direct".

The next question to ask is whether there is any evidence for distinguishing between subject and direct object in their syntactic behavior. At this point, the data and their interpretation become less clear to me, so I will content myself with presenting some relevant data and commenting on their possible significance. Shi (1980) extends his characterization of the class of possible controllers by arguing that the controller can also be, in his terms, the specifier of the subject, i.e. roughly a possessor within the subject noun phrase, as in the following example:

(53) Tā$_i$-de tóu yǒudiǎnr téng,
he-GEN head a.little hurt
—$_i$ dùzi yòu bù shūfu,
stomach also not good
—$_i$ méiyǒu chī wǎnfàn.
not-ASP eat dinner
'His$_i$ head is hurting a little,
his$_i$ stomach is also not good,
and he$_i$ hasn't eaten dinner.'

This example can, of course, also be presented with overt topicalization of the possessor noun phrase, though this is not necessary:

(54) Tā$_i$ tóu yǒudiǎnr téng,
he head a.little hurt
—$_i$ dùzi yòu bù shūfu,
stomach also not good
—$_i$ méiyǒu chī wǎnfàn.
not-ASP eat dinner

Shi claims moreover that it is not possible for the controller to be the specifier of the direct object noun phrase. This suggests that there is indeed a difference between subjects and direct objects, but one shown in a remarkably subtle way: It is not shown directly by differential behavior of subjects and direct objects, but rather by the differential behavior of noun phrases internal to the subject and direct object noun phrases. But before accepting this conclusion, I think that it is necessary—and I pose this as a research task for specialists in the Chinese language—to investigate how general the construction type illustrated by (53) is in Chinese. The examples that are usually presented are from a quite narrow semantic range, so that one might try to argue that the relevant factor is not so much syntactic ("being specifier of the subject noun phrase") as semantic. At any rate, these are intriguing data that merit further detailed investigation.

Another set of data relevant to distinguishing between subject and direct object concerns sequences of clauses where there is an overt coordinating conjunction, such as *bìngqiě* 'and'. In a pair of asyndetically conjoined clauses like (55), there are two possible interpretations, since the controller can be either the subject or the direct object:

(55) Lǐsì$_i$ mǎi-le yì-zhī gǒu$_j$,
Lisi buy-ASP one-CL dog
—$_{i/j}$ táozǒu-le.
flee-ASP
'Lisi$_i$ bought a dog$_j$,
and he$_i$/it$_j$ fled.'

If, however, the two clauses are joined by means of an overt conjunction, the only possible interpretation is with the subject as controller of the null-anaphor in the second clause:

(56) Lǐsì$_i$ mǎi-le yì-zhī gǒu$_j$,
Lisi buy-ASP one-CL dog
bìngqiě —$_{i/*j}$ táozǒu-le.
and flee-ASP
'Lisi$_i$ bought a dog$_j$
and he$_i$/*it$_j$ fled.'

Prima facie, such data seem to provide evidence for the subject–object distinction, and are cited as such by, for instance, Shi (1989: 243–244), who explicitly draws the contrast between clauses linked by a conjunction and those linked asyndetically. One objection that I have heard to such data is that they are not "natural" in Chinese, in contrast to the asyndetic linkage; but even so, it is not clear why this construction, even if innovatory, should be subject to the constraint that the controller (and, indeed, the target) must be subjects, with the implication that Chinese has created a distinction between subjects and direct objects just in order to constrain this new construction. No doubt one could continue for a long time with such speculations; I prefer to leave further investigation of this construction to those who know Chinese better than I do.

4. Conclusion

A linguist who is familiar with the structure of language A and who approaches the analysis of a very different language B might adopt one of two extreme positions, in addition to a number of intermediate positions. One extreme would be to assume that language B is going to have essentially the same structure as language A, so that features of language A that are not apparent in language B will be held to be "covert" features of the structure of language B. The opposite extreme is to assume that only "overt" features of language B are relevant to its analysis, thus denying any relevance of properties of language A that are not immediately apparent in language B. I have tried to show that both approaches are likely to be misguided. There are deep-seated differences between languages of different types, and simply carrying over the structure of one language to another language can lead us to misanalyze language B, to apply categories to it that are simply not relevant to its structure. On the other hand, insisting solely on cataloguing observables can equally lead to a loss of insight in the analysis of language B, since there may well be properties of language B that can only be demonstrated by more detailed analysis, but which can nonetheless be clearly demonstrated by such detailed analysis. The crucial point is that whatever analysis we propose for language B, we must be able to justify that particular analysis for language B. In some cases, phenomena that we find in language A will turn out to be relevant in describing language B, even though the precise criteria serving to delimit those phenomena may be different in the two languages. In yet other cases, language B will have nothing comparable to some phenomenon found in language A, and will simply have to be described without that category. And in yet other cases, perhaps the most interesting, language B will turn out to have some phenomenon that is similar but not identical to what we find in language A, so that careful detailed analysis will be needed to establish the precise similarities and differences between the two languages. I have used Chinese data to try and illustrate some of these possibilities. However, I should emphasize that my interest has not been in advocating a particular analysis of Chinese—it would have been rash indeed for me to have done so—but rather to encourage investigators of the Chinese language to consider possibilities in addition to those that are suggested on the one hand by European languages, on the other hand by the absence of "obvious" grammatical criteria in Chinese. Finally, I should perhaps emphasize that the different approaches to language-universality and language-specificity that I have outlined can be found within linguistic schools that are otherwise quite different from one another. Thus, within generative grammar we have seen a move away from the view that all languages are essentially the same by the introduction of the radical distinction between configurational and non-configurational languages (e.g. Hale 1983)—with more recently a trend back towards the view that all languages are more similar to one another. And much of the detailed work on grammatical relations from the typological perspective can be seen as a reaction to the rule of thumb (and perhaps no more!) adopted in one of the pioneering works of this approach, Greenberg (1966), that grammatical relations can be identified intuitively on the basis of translation equivalents. The possibilities for cross-linguistic variation are something that every linguist needs to know about.

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Is Chinese a Pragmatic Order Language?

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Abstract

Chinese is shown to be a discourse accusative language in which there is a strong discourse pressure uniting S and A in that they both introduce given information in to discourse. The pairing together of S and A motivates a nominative category, namely a category that marks topical information, while new information is introduced into the discourse in the O or oblique role. Moreover, data on anaphoric links across successive clauses show that S/A links far outnumber S=O links. Thus the topic continuity dimension also defines for Chinese a nominative/accusative {S, A} alignment.

Word order in Chinese is shown to be more sensitive to valency role than to discourse pragmatics, though both factors are highly predictive of word order. The present study suggests that Chinese is aligned with other type C language (e.g. Norwegian and English) where the only device available for expressing semantic (e.g. that of the agent) and pragmatic functions (e.g. that of topic) is linear order. However, Chinese differs from these other type C languages in that when there is a conflict between semantics and pragmatic functions, type C languages typically resolve the conflict by availing themselves of a syntactic role changing process (e.g. passive), while Chinese typically relies on a complex interplay between semantics and pragmatics for its resolution.

1. Introduction

It is now widely agreed that discourse pragmatics provides much of the substance of grammar. A primary assumption that emerges functional linguistics is that grammar is discourse driven and that grammar is motivated in large part by functional considerations. Language derives its particular organization from the ecological setting in which it functions and grammar emerges from recurrent patterns in discourse constrained by cognitive and communicative aspects of human behavior (Hopper 1987, 1988). Grammar is an open-ended set of regulations that are constantly being resystematized through use. As Du Bois (1985:363) has put it, "grammars code best what speakers do most." This process, known as grammaticalization (or syntacticization), is the primary explanatory assumption that must be made to come to grips with the nature of grammar. Focusing on the grammaticalization process as manifested in discourse frequency forces us to the conclusion that the mechanism by which grammar emerges must be sought in the recurrent patterns in the way people track referents, negotiate information flow and determine how to get their points across. Recent studies have shown that convincing account of grammatical facts cannot be given unless discourse structural facts are considered. For example, insights into grammatical relation, word order, anaphora, topicality and evidentiality, among others, are particular noteworthy. Grammar can't be just a fixed mental system recoverable from an examination of the mind of a single individual, but is an activity embodied and constituted in the pragmatics of communication (Hopper and Thompson 1991).

In this paper we seek to shed light on the pragmatics of word order in Chinese. We will show that Chinese is a discourse accusative language where there is a strong pressure uniting S and A in that they both introduce given information into discourse. The pairing together of S and A motivates a nominative category, namely a category that marks topical information, while new information is introduced into the discourse in the O or oblique role. Moreover, data on anaphoric links across successive clauses show that S/A links far outnumber S/O links. Thus the topic continuity dimension also defines for Chinese a nominative/accusative {S, A} alignment.

Word order in Chinese is shown to be more sensitive to valency role than to discourse pragmatics, though both factors are highly predictive of word order. The present study suggests that Chinese is aligned with other type C language (e.g. Norwegian and English) where the only device available for expressing semantic (e.g.

that of the agent) and pragmatic functions (e.g. that of topic) is linear order. However, Chinese differs from these other type C languages in that when there is a conflict between semantics and pragmatic functions, type C languages typically resolve the conflict by availing themselves of a syntactic role changing process (e.g. passive), while Chinese typically relies on a complex interplay between semantics and pragmatics for its resolution.

Below we will first present facts of word order in Chinese and facts of the semantics and pragmatics of nominal arguments. We will then interpret the correlation between word order and discourse-pragmatic functions. Finally, we will explain distributional correlations.

2. The data

The corpus for this paper comprises one ordinary conversation and two oral narratives. The conversation, a spontaneous dining-table among one female and three males, centered around the people and the events taking place in the office where the participants worked. The conversation ran to 40 minutes long and totaled 1049 clauses (clause fragments not counted), where clauses are defined as a predicate element together with its argument(s).

The two narratives were retellings of the stories about the Ghost film and the Pear film. The Pear narratives of different languages have been employed for information flow studies, such as Chamorro (Scancarelli, 1985), Japanese and English (Iwasaki, 1985), and Sacapultec (1987). The Chinese Pear narratives were produced in 1976 by eighteen female speakers who were undergraduate students at National Taiwan University. After they had seen the 15 minute-long film, each was taken individually into a room where a female interviewer, not an acquaintance of the interviewees, explained that she had not seen the movie and asked the speaker to recount to her the story of the film. These data formed the basis of an earlier study on referential choice in Chinese (Chen 1986).

The Ghost narratives were obtained in an analogous fashion, though there were differences in detail. First, Ghost was a full-length film lasting 127 minutes. Secondly, four narrators, two females and two males, had already seen the film for over one year before the taping sessions in the speech laboratory of their office, where they recounted the film to the interviewer. Since the narrators and the interviewer were office mates rather than strangers, their narration was produced in a more 'relaxed' and 'natural' fashion.

Table 1. summarizes the recording time and the number of clauses produced in each text. Only clauses with overt or covert but recoverable arguments are tabulated in the count; clause fragments are excluded from the tabulation.

	Recording time (min.)	Clauses	Main clause
conversation	38.8	1049	1006 (95.9%)
Ghost	36.1	621	580 (93.4%)
Pear	41.7	1000	965 (96.5%)

Table 1. Summary of data.

It is of interest to note that of the clauses produced, main clauses predominated in each text, at something like 95%, and that there is no significant difference in percentage between any two types of texts, though one might have expected the conversation text, with frequent topic changes and less dwelling on details of events, to have a much higher proportion of main clauses. By contrast, Ghost and Pear there would be much more of the tellers' attempt to successfully reconstruct the stories of the films, which, in the case of Ghost, contain a significant amount of the portrayal of the inner world of the protagonists and therefore would seem to call for a wider-ranging use of mental and psychological predicates with accompanying sentential complements.

3. Valency role orders

In the following discussion, surface core arguments A, S, and O will be termed valency roles instead of the more usual syntactic roles (e.g. Payne 1987). Following Dixon (1979), A and O refer to the topical agent and patient of a transitive verb and S the single argument of an intransitive verb. The text data show that a strongly preferred order of nominal arguments, relative to the verb, can be identified. Table 2. presents various valency role orders for clauses that have two, one, or zero overt arguments.

AVO	337
AOV	37
OAV	8
VO	249
OV	85
AV	28
SV	536
VS	126
V	273
total	1679

Table 2. Distribution of various valency role orders.

As shown in Table 2., the most common clause types in discourse are AVO for transitive clauses and SV for intransitives. Furthermore VO order outnumbers OV order by a 4.5:1 ratio (586:130).

Table 3. shows the distribution of clauses with zero, one, and two missing arguments in relation to transitivity.

number of missing arguments	Transitive	Intransitive	Total
0	382	662	1044
1	362	269	631
2	4	---	4
total	748	931	1679

Table 3. Distribution of clause types as a function of missing arguments.

As seen in Table 3., there is an unmistakable tendency for clauses to have one less overt core argument than the number allowed.

Table 4. presents cross-tabulations of valency roles (A, S, and O) with pre- vs. postverbal position for clauses with one and two overt core arguments in the conversation text. Tables 5. and 6. present the same cross-tabulations for the Ghost and Pear texts.

	A		S		O		total
	N	%	N	%	N	%	N
Preverbal	119	100.0	227	93.4	9	7.6	355
Postverbal	0	0.0	16	6.6	110	92.4	126
total:	119	100	243	100	119	100	481

($X^2 = 360.66$, d.f. = 2, $p < .01$; $\phi = .86$)

Table 4. Syntactic role and pre- vs. postverbal order (conversation).

	A		S		O		total
	N	%	N	%	N	%	N
Preverbal	110	100.0	121	88.3	8	7.3	239
Postverbal	0	0.0%	16	11.7	102	92.7	118
total:	110	100	137	100	110	100	357

($X^2 = 259.61$, d.f. = 2, $p < .01$; $\phi = .85$)

Table 5. Syntactic role and pre- vs. postverbal order (Ghost).

	A		S		O		total
	N	%	N	%	N	%	N
preverbal	153	100.0	188	66.7	28	18.3	369
postverbal	0	0.0	94	33.3	125	81.7	219
total:	153	100	282	100	153	100	588

($X^2 = 222.05$, d.f. = 2, $p < .01$; $\phi = .61$)

Table 6. Syntactic role and pre- vs. postverbal order (Pear).

Tables 4~6 show that pre- versus postverbal order of nominal arguments are strongly associated with valency roles. Not only are the X^2 values highly significant, but the ϕ statistics also show a very strong association between form (pre- vs. postverbal order) and function (valency roles). The significance of the association results primarily, especially in conversation and Ghost, from the strong placement in the preverbal position of A and S and the nearly equally strong placement in the postverbal position of O.

Tables 4~6 also show that as expected, there is an ambiguous one to many correlation from form to function, since the preverbal position may be either A or S, though the postverbal position is nearly categorically O. The very same data in Tables 4~6 can be rearranged, as correlations from function to form. When this is done, it can be readily seen that there is a near-categorical tendency for A and S to appear in preverbal position, and O in postverbal position, since the mean prediction rate is a respectable 95.2%.

4. Word order and information status of NPs

In the following discussion, two activation states are distinguished for NPs. A nominal is considered given if it has already been activated at the point in the speech act where the nominal appears. 'New' referents refer to any nominals that are not given. Accessible referents that have not been mentioned but are frame-based are treated as new information in this paper.

Table 7. presents cross-tabulations of activation states of nominal arguments (given, new) with pre- vs. postverbal position in the conversation text. Tables 8~9 present the same cross-tabulations for the Ghost and Pear texts.

	Given		New		total
	N	%	N	%	N
Preverbal	314	88.5	41	11.5	355
Postverbal	74	58.7	52	41.3	126
total:	388		93		481

($X^2 = 52.67$, d.f. = 1, $p<.01$; $\phi = .33$)

Table 7. Information status and order (conversation).

	Given		New		total
	N	%	N	%	N
Preverbal	224	93.7	15	6.3	239
Postverbal	56	47.5	62	52.5	118
total:	280		77		357

($X^2 = 99.96$, d.f. = 1, $p<.01$; $\phi = .53$)

Table 8. Information status and order (Ghost).

	Given		New		total
	N	%	N	%	N
Preverbal	333	90.2	36	9.8	369
Postverbal	89	40.6	130	59.4	219
total:	422		166		588

($X^2 = 166.91$, d.f. = 1, $p<.01$; $\phi = .53$)

Table 9. Information status and order (Pear).

Tables 7~9 show that pre- versus postverbal order of nominal arguments are strongly associated with their information status. However, all three of the ϕ statistics show the association to be much weaker than that between word order and valency roles. They also show that, again as expected, there is an ambiguous one to many correlation from form to function, since the postverbal position may equally be given or new in all of the three texts, though there is a near-categorical tendency for the preverbal position to be given.

The very same data in Tables 7~9 can be recomputed, as correlations from function to form. When this is done, it can be readily seen from Tables 10~12 that the function-form mapping is hardly ambiguous: both the 80:20 ratio vs. 19.5:80.5 ratio for the Ghost text and the 79:21 ratio vs. 26:74 ratio for the Pear text are in the same direction. However, it can be easily determined that the mean prediction rate (for predicting word order on the basis of given vs. new information) is just 75%, which is not only lower than the 95.2% prediction rate for valency roles cited earlier, but also lower than the normal value of 80%~90% for code fidelity (Givón 1992).

	Preverbal		Postverbal		total
	N	%	N	%	N
Given	314	80.9	74	19.1	388
New	41	44.1	52	55.9	93
total:	355		126		481

Table 10. Information status and order (conversation).

	Preverbal		Postverbal		total
	N	%	N	%	N
Given	224	80	56	20	280
New	15	19.5	62	80.5	77
total:	239		118		357

Table 11. Information status and order (Ghost).

	Preverbal		Postverbal		total
	N	%	N	%	N
Given	333	78.9	89	21.1	422
New	36	21.7	130	78.3	166
total:	369		219		588

Table 12. Information status and order (Pear).

We have shown, then, that word order in Chinese is far more sensitive to valency roles than to activation states (given, new) of nominal arguments. What remains to be demonstrated is whether word order is also sensitive to other dimensions of discourse pragmatic information. This will be attempted in the following section.

5. Word order, identifiability and generality

Identifiability is a discourse category used to characterize the speaker's assumption about whether a particular referent can be identified by the hearer. An NP is identifiable if the speaker indends and believes that the hearer can mentally tag the information as identifying a particular referent which will have continuous identity over time. A non-identifying expression is one which is either non-referential or the speaker believes the hearer cannot tag the information as identifying some particular identities.

Generality as a discourse property concerns whether a referent refers to a particular entity (particular) or a class of entities (generic).

Table 13. presents cross-tabulations of activation states, identifiability and generality of nominal arguments with pre- versus postverbal O. Table 14. presents the same cross-tabulations for pre- versus postverbal S.

	Preverbal O		Postverbal O		total
	N	%	N	%	N
Given	113	86.3	449	61.1	304
New	18	13.7	286	38.9	562
total:	131	100	735	100	866
	($X^2 = 30.9$, d.f. = 1, $p < .01$; $\phi = .19$)				
Identifiable	112	85.5	535	72.8	647
Non-identifiable	19	14.5	200	27.2	219
	($X^2 = 9.35$, d.f. = 1, $p < .01$; $\phi = .10$)				
Generic	13	9.9	244	33.2	257
Particular	118	90.1	491	66.8	609
	($X^2 = 29.05$, d.f. = 1, $p < .01$; $\phi = .18$)				
Human	27	20.6	225	30.6	252
Non-human	104	79.4	510	69.4	614
	($X^2 = 5..27$, d.f. = 1, $p < .01$; $\phi = .08$)				

Table 13. Pragmatic and semantic categories and the order of O.

	Preverbal S		Postverbal S		total
	N	%	N	%	N
Given	812	92.5	39	31	851
New	66	7.5	87	69	153
total:	878	100	126	100	1004
	($X^2 = 327.3$, d.f. = 1, $p < .01$; $\phi = .57$)				
Identifiable	819	93.3	30	23.8	849
Non-identifiable	59	6.7	96	76.2	155
	($X^2 = 419$, d.f. = 1, $p < .01$; $\phi = .65$)				
Generic	83	9.5	27	21.4	110
Particular	795	90.5	99	78.6	894
	($X^2 = 15.46$, d.f. = 1, $p < .01$; $\phi = .12$)				
Human	691	78.7	89	70.6	780
Non-human	187	21.3	37	29.4	224
	($X^2 = 4.24$, d.f. = 1, $p < .05$; $\phi = .06$)				

Table 14. Pragmatic and semantic categories and the order of S.

A number of significant results emerge from Tables 13. and 14. First, the semantic category human/non-humans has little predictive value for order. Secondly, generality is also a poor predicator of word order. Thirdly, activation state and identifiability work in parallel in the predictive success with word order. In other words, word order can be equally well or equally poorly predicted on the basis of either activation state or identifiability. Thus they are equally strong predictors of pre- vs. postverbal S, but equally poor predictors of pre- vs. postverbal O. These results taken together suggest that morphological types of nominal arguments in Chinese are used essentially to only encode either the more linguistic context-bound activation states or identifiability, which has a stronger mix of extra-linguistic components, since pathways to identifiability include not only previous mention, but also situational settings and invoked frames.

Tables 12 and 13 further show that the structural split is strongly motivated by discourse pragmatics, but the structural split of O much less so. The prediction rates from pragmatic categories to pre-/postverbal S order are respectively 80.8% for activation state (given/new), and 84.8% for identifiability. If we believe with Givón (1992) that the perceiving mind needs a code fidelity somewhere about or above the level of 80% prediction rate for it to begin to bet on a 100% categorical distribution and ignore the margins, then Chinese can be said to have nearly grammaticized the scalar distribution of various pragmatic properties of nominal arguments in pre- vs. postverbal S position as identifying a grammatical existential construction. But the same cannot be said of the structural split of O. The low ϕ statistics in Table 13. mean that there would be little predictive success from function to form. Thus the prediction rate from activation state to order is a mere 57.5%, and that from identifiability to order 56.3%, both of which are at chance level. The prediction rate from particular to order is higher, at 61.5%, which is still nowhere near the threshold 80% of code fidelity required of categorical distribution.

6. Topicality hierarchy

The present date indicate that 98% of the clause-initial position is preempted by an NP which is either an A (and hence categorically topic of the clause) or a (preverbal) S (and hencce also categorically topic of the clause). The clause-initial NP then represents a convergence of semantic ("role") properties of agent and the pragmatic ("reference") properties of clausal topic. A and S are much more topical than O not only in their greater propensity to preempt the clause-initial position but also in their stronger tendency to form continuous anaphoric links across successive clauses. To measure topic continuity across different valency roles, anaphoric links across adjacent clauses are tabulated according to the valency roles in which the co-referential referents occur in the two clauses'. For example, the pronominal ta 'she' in (1) appears in the A role in clause (a), but re-appears in the succeeding clause (b), then this particular link across A and S is tabulated as an instance in the linkage class of 'A-to-S'.

(1) a. -->Y: ...yinwei **ta** yiqian,_
because 3.SG previously
'Because she previously,

conglai mei you zhe ge jingyan a.\
ever NEG have this CL experience PRT
did not ever have this kind of experience,

b. --> ... suoyi% suoyi na ge **nude** jiu xiayitiao.\
so so that CL woman thus be.frightened
so that woman was frightened.' (GHOST 4:207-10)

Tables 15~17 present the distribution of various types of anaphoric links for A, S, and O.

	N	%
A-to-A type	400	63.3
A-to-S type	201	31.8
A-to-O type	31	4.9
total:	632	100

Table 15. Anaphoric linkage of A (After Chui 1994:64-65).

	Preverbal		Postverbal	
	N	%	N	%
S-to-S type	208	47.1	7	19.4
S-to-A type	210	47.5	25	69.4
S-to-O type	24	5.4	4	11.1
total:	442	100	36	100

Table 16. Anaphoric linkage of S ($X^2=10.53$) (After Chui 1994:104-105).

	Preverbal		Postverbal	
	N	%	N	%
O-to-A type	5	17.2	40	25.5
O-to-S type	5	17.2	40	25.5
O-to-O type	19	65.5	77	49.0
total:	29	100	157	100

Table 17. Anaphoric linkage of O ($X^2=2.56$) (After Chui 1994:84).

Since the total number of nominals in A, preverbal S, postverbal S, preverbal O and postverbal O are respectively 1214, 878, 126, 131 and 735, we can easily determine that the percentages of various valency roles forming anaphoric links are shown in Table 18.

	all texts		Ghost & Pear only	
A	52%	632/1214	59%	484/819
preverbal S	50.3%	442/878	57.2%	290/507
postverbal S	28.6%	36/126	31%	34/110
preverbal O	22.1%	29/131	22.6%	26/115
postverbal O	20%	147/735	21.4%	104/486

Table 18. Percentage of valency roles forming anaphoric links.

As shown in Table 18., A and preverbal S are, as expected, the most predictable, continuous and topical valency roles, followed by postverbal S, pre- and postverbal O. X^2 tests show that there is no significant difference either between the first two roles or among the last three roles. One may thus suggest the following topicality hierarchy for valency roles defined in terms of their ability to form anaphoric links:

(2)
$$\left\{ \begin{array}{l} \text{A} \\ \\ \text{preverbal S} \end{array} \right\} > \left\{ \begin{array}{l} \text{postverbal S} \\ \text{preverbal O} \\ \text{postverbal O} \end{array} \right\}$$

Since A and preverbal S are overwhelmingly given (97.4% for A; 92.5% for perverbal S), identifiable (94.8% for A; 93.3% for preverbal S) and human (94.6% for A; 78.7% for preverbal S), they are therefore the most continuous and predictable arguments. By contrast, all other valency roles are by implication should rank lower on the topicality hierarchy in an asymmetric 'figure-ground' sort of distinction, since if preverbal valency roles are maximally topical, then one would expect postverbal valency roles to be maximally non-topical. It is easy to see why this should be the case. In a language with a preferred word order of AVO, the postverbal O position is where relatively incidental or unimportant information to the development of the narrative goes (the so-called "unimportant information last principle"). Nominal arguments that appear there tend to be be new, non-identifiable and/or non-human. On the other hand, postverbal S is where new entities are introduced into discourse for the first time, often at points of higher thematic discontinuity (e.g. at paragraph or topic chain boundary points), reserving the preverbal S position for the more topical, identifiable and/or human referents. Most of the postverbal initial mentions on S have little thematic continuity (i.e. are not needed in subsequent discourse), just as most of the postverbal mentions on O do.

But why should preverbal O rank lower on the hierarchy just as postverbal O and postverbal S do? We have shown above that the structural split of O is hardly motivated by discourse pragmatics. On the other hand, the low ϕ statistics already tell half of the story. On the other, the 86.3:61 ratio versus 13.7:39 ratio for given/new, or the 85.5:72.8 ratio versus 14.5:27.2 ratio for identifiablity, or 79.4:69.4 ratio versus 20.6:30.6 ratio for humanness (see Table 14.) are all in the same general undramatic direction. It should not be surprising therefore that both postverbal O and preverbal should have turned out to rank equally low on topicality hierarchy.

If our interpretions of preverbal O, based on the distribution of various discourse-pragmatic dimensions of information encoded on NPs, are on the right track, then they should seriously call into question the proposal by Sun and Givón (1985) that OV word order in Chinese is a contrastive, topicalizing device.

7. "Subject"-like properties in clause-initial position

If we disregard positional role differences in S or O, and if we sum all of the various types of anaphoric links (see Tables 15~17) regardless of directionality, we find that the most preferred links are either identical links with A, S (i.e. A/A, S/S), or non-identical S/A links, as Table 20. shows:

Anaphoric types	N	%
A/A	400	32.5
S/S	208	16.9
O/O	77	6.3
S/A	411	33.4
S/O	64	5.2
A/O	71	5.8
total:	1231	100

Table 19. Types of anaphoric links (After Chui 1994:140).

The results shown in Table 19. suggest that co-reference across adjacent clauses is fairly independent of valency roles, since any anaphoric link is possible. However, since 82.8% of the links (A/A, S/S and S/A) are co-reference under identity of primary topic (A or S), the clause-initial NP position in Chinese, which represents a convergence of semantic ("role") properties of clausal topic, has thus a reference-related 'subject' property characteristic of language where subject is syntactically important. Furthermore, the fact that S/A anaphoric links are the most common preferred way of forming anaphoric links suggest that a S/A semantic pivot in the sense of Foley and Valin (1984:119) has emerged, a pivot which neutralizes the semantic distinction between S and A. Chinese is thus unlike Eastern Pomono, a strict active-stative language whose switch-reference system seems to monitor semantic roles of actor and undergoer directly, not the more abstract S/A semantic pivot (Foley and Valin 1984:121). However, the fact that 11% of the links are of the S/O and A/O types and that there was a near total absence of the bei sentences from the data (there being only 3 out of 2551 clauses, or just 0.1%) strongly suggest that changes in the pragmatic role of a nominal in Chinese does not tend to changes in "syntactic role", and that Chinese does not have the kind of pivot system like that found in either English or Dyirbal where the choice of pivot is largely governed by the demands of topicality and cross-clause linkage under coreference, hence necessitating the use of passive or antipassive construction to permit alternative choices of pivot when demanded by context. Chinese appears, then, to be opting for the "Philippine style" solution, whereby the overall order is highly sensitive to both valency roles and pragmatic information, and yet preverbal S/postverbal S order is stongly influenced by the pragmatic properties of the nominal arguments. A strictly reference-prominent (or subject-prominent) language would have opted for a more 'unified' syntactic treatment of S rather than a structural split of S motivated by semantic or discourse-pragmatic considerations.

To summarize, Chinese represents a language where semantic role and pragmatic reference have been more or less grammaticized (given syntactic encodings) and are expressed by the same means, linear order, but there is no, or rarely, role-changing morphosyntactic process. Such a language tends to discourage a patient from being a toic or taking the clause-intial position to avoid the conflict between an agentive topic and a non-agentive topic. This is indeed the case in Chinese. Table 2. shows that OAV accounts for just 0.4% of all clause types and that the so-called topic comment constructions are practically non-existent. (There is none in the present data).

A/S in Chinese has acquired some 'subject' properties, though still not all of the subject properties characteristic of subject-prominent languages (e.g. subject-verb agreement), so that it is still a category of "grammaticized topic" in the sense of Comrie (1988), distinct from topic and from subject.

Even though Chinese lacks a syntactic category that can be identified with the subject category of other languages, it offers some insights into why the subjects of other languages have the syntactic properties they do.

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漢語七個類型特徵的來源

梅祖麟

一、

羅杰瑞 (Jerry Norman, 1988:11)曾經用七個類型特徵來分析亞洲的十八個語言，漢語的類型分成古代 (classical) 和現代 (modern) 兩項來描寫。這七個類型特徵是：

(1)語素是單音節的。
(2)帶聲調。
(3)沒有複聲母。
(4)缺乏形態或形態薄弱。
(5)必須用量詞。
(6)A-N 詞序；A 代表adjective(形容詞)，N 代表noun(名詞)。
(7)SVO詞序。

按照這七個特徵，羅氏認爲古代漢語和現代漢語是：

	1	2	3	4	5	6	7
現代漢語	+	+	+	+	+	+	+
古代漢語	+	?	—	+	—	+	+

本文把羅氏的特徵和結論修改一下。修改的部分有二：

第一、本文用上古漢語、遠古漢語來替代羅氏的古代漢語，進而推測遠古漢語的特徵。比方說，上古漢語還有SOV詞序的殘留，我們於是推測遠古漢語的詞序是SOV。第二、我們把(6)改爲(6')：

(6')修飾語--中心語詞序。

A-N詞序只是修飾語--中心語詞序的一類。這樣修改以後，再抄上羅氏給景頗語、藏文作的分析，結果可以寫成下面的表：

	1	2	3	4	5	6	7
現代漢語	+	+	+	+	+	+	+
遠古漢語	+	—	—	±	—	—	—

藏文	+	–	–	–	–	—(6)	–
景頗語	–	+	–	+	–	—(6)	–

這張表有兩點值得注意。第一、遠古漢語很像藏文、景頗語。第二、現代漢語既不像藏緬語，也不像遠古漢語。換句話說，除了單音節那項特徵以外，現代漢語其他的六項類型特徵都是新興的。本文最後一節討論這六個類型特徵是怎麼來的：是受鄰近語言的影響而產生的，還是漢語自己從內部發展出來的？

二、

上面所說的七項特徵，(1)單音節、(2)帶聲調、(3)沒有複聲母、(5)必須用量詞一這四項比較簡單。(1)漢語從古到今，語素是單音節的。從漢代開始，語詞有雙音節化的傾向。(2)去聲來自-s，上聲來自-?，所以遠古漢語是沒有聲調的；至於<<詩經>>時代是否有聲調，至今沒有一致的看法，也許短期內也無法解答這個懸案。(3)上古漢語有複聲母是大多數學者承認的，可惜目前我們還不知道複聲母到底有哪幾種。(5)先秦時代還沒有必須用的量詞；"一馬"、"此人"常見；眞正的量詞是漢代興起的。

剩下三項特徵是：(4)缺乏形態或形態薄弱，(6)修飾語--中心語詞序，(7)SVO詞序。下面分別討論。

2.1 上古漢語的形態

上古漢語的形態，我們知道得比較清楚的有s-詞頭，功用是使動化和名謂化(denominative)；-s詞尾，功用是名詞化；還有由清濁聲母交替形成的構詞法，清音聲母的是他動詞，濁音聲母的是自動詞或形容詞，後者也有既事式的意味。

2.1.1 名詞化-s詞尾的例：

	漢		藏		漢		藏	
動詞	量$_{平}$	*C-rjang	'grang	名詞	量$_{去}$	*C-rjangs	grangs	
	織$_{入}$	*tjək	'thag		織$_{去}$	*tjəks	thags	織成品

此外還有 非去聲(動詞)/去聲(名詞) 交替的例，如：入/內；立/位；泣/淚；結/髻；鍥/契；列/例；責/債。去聲來自-s，所以這些也是名詞化-s詞尾的例。

2.1.2 使動化或名謂化s-詞頭的例：

使動化：

順	*djəns > d́zjuĕn	馴	*sdjən > zjuĕn
滅	*mjiat > mjät	烕	*smjiat > xjwät

玄應<<一切經音義>>引<<說文>>："養鳥獸使服謂之馴"；"使服"就是"使順"。<<詩、正月>>"燎之方揚，寧或滅之。赫赫宗周，褒姒烕之"的意思是"褒姒致使宗周滅亡"。

名謂化：

墨	*m̂ak > mək	黑	*smək > xək
林	*C-rjəm > ljəm	森	*srjəm > ʂjəm
鬳	*ngjans > ngjɐn	獻	*sngjans > xjɐn

2.1.3 清濁聲母交替的例：

			他動		自動
*p- > p-	:	*b- > b-	敗補敗切	:	敗薄邁切
			別彼列切	:	別皮列切
*tj- > ts'j-	:	*dj- > z'j-	折之舌切	:	折市列切
			屬章玉切	:	屬時玉切
*trj- > tj-	:	*drj- > ḍj-	著陟略切	:	著直略切
			張陟良切	:	長直良切
*k- > k-	:	*g- > γ-	解古買切	:	解胡買切
			見古甸切	:	現胡甸切
			繫古詣切	:	繫胡計切

至於更早是否有個詞頭，造成後來清濁聲母的交替，我們目前還說不清楚。

2.1.4 其他的形態

俞敏<<中國語文學論文選>>117-120頁舉"來/麥"，"令/命"，"劉/卯"，"䜌/蠻"中古 l-/m-交替的例，來說明上古m-有名詞化作用。"令/命"的例尤其引人入勝。<<孟子，離婁>>："齊景公曰：'既不能令，又不受命'"；<<周禮，大司徒>>"正歲，令於教官曰:'......以聽王命'"。這兩個例都說明"令"是動詞，"命"是名詞。

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張琨、張蓓蒂(1976)認爲上古漢語有個 N- 詞頭，我也曾想過上古 -r- 中綴的問題。前者構詞功用不明，漢語中缺乏明確的例證。後者也是功用不明，而且藏緬語中似乎沒有可以對應詞綴。這種可能存在而目前說不清楚的詞綴本文暫且不談。

據上所述，遠古漢語至少有s-詞頭、-s詞尾、清濁聲母交替的構詞，可能還有m-詞頭。這就是我們在(4)(形態)那項給遠古漢語劃"±"的原因。比起藏文固然不足，比起現代漢語來，上古的形態卻綽綽有餘。

2.2 修飾語--中心語詞序

現在以名詞爲中心語的偏正結構，詞序一般是修飾語在前，中心語在後。下面舉詞序相反的例。(藤堂明保<<漢字　起源>>(1966)，76-77)

(一)後代皇帝的謚號，詞序是〔修飾詞-名詞〕，如"高宗"、"太祖"、"文帝"、"武帝"等。殷商的人名則不然，如"帝堯"、"帝舜"、"后稷"、"公劉"(周的祖先)。甲骨文裡殷代帝后的名稱也是"父丁"、"祖庚"、"妣甲"、"帝辛"。到了春秋時代，齊國太公呂尚的子孫稱爲"丁公"、"乙公"、"發公"已是後世習慣的詞序了。

(二)殷墟卜辭中的地名有"丘商"、"丘雷"，是後世的商丘、雷丘。春秋時代有名的戰場"城濮"，後來稱爲"濮城"。春秋地名"城父"、"城穎"也是這型。

(三)數目字在殷周時代放在名詞之後，如甲骨文"獻牛一羊一"，西周金文"孚人萬三千八十一人，孚馬□匹，孚馬卅兩，孚牛三百五十五牛，羊卅八羊"(小盂鼎)。參考Greenberg's Universal 18 (Greenberg, Joseph. Universals of Language (second edition, 1966), p.86):

When the descriptive adjective precedes the noun, the demonstrative and the numeral, with overwhelmingly more than chance frequency, do likewise.

	NA	AN
Num.-Noun	8	10
Noun-Num.	11	0

(四)<<詩經>>裡的"中谷"、"中林"、"中逵"是後世的"林中"、"谷中"、"街中"。唐代孔穎達已經注意到這種現象。<<詩、葛覃>>："葛之覃兮，施之中谷"。傳云："中谷，谷中也"。孔穎達<<詩經正義>>曰："中谷，谷中。倒其言者，古人之語皆然，詩文多此類也"。

(五)我以前(梅祖麟 1988b:155-157)曾嘗試說明，漢代由【〔S〕N〔VP者〕N】N 詞序變成【〔VP者〕N〔S〕N】N 詞序，同時【名+〔數+量〕】也變作【〔數+量〕+名】。現在簡單地綜述。

先秦如果要用動詞性謂語來修飾主語，一種方式是用【〔S〕〔VP者〕】，例如

臣弒其君者有之，子弒其父者有之。(孟，滕文公下)
南門之外有黃犢食苗道左者。(禮記，檀公下)
原(源)濁者流不清。(墨，修身)

漢代沿用【〔S〕〔VP者〕】，例如<<史記>>裡的句子：

他小渠披山通道者，不可勝言。(河渠書)
高乃與公子胡亥承相斯陰謀，破去始皇所封書賜公子扶蘇者。(秦始皇記)
當其時，巫行視小家女好者，云是當為河伯婦，即聘取。(滑稽列傳補)

同時漢代又興起【〔VP者〕〔S〕】，例如<<史記>>裡的：

項王怒，將誅定殷者將吏。(陳丞相世家)
何太子之遣往而不返者豎子也。(刺客列傳，荆軻)
於是平原乃斬笑躄者美人頭。(平原君)
因厚幣用事者臣靳尚。(屈原傳)

<<孟子>>裡的"臣弒其君者"是【〔S〕〔VP者〕】，中心語在前，修飾語在後。<<史記>>的"用事者臣"是【〔VP者〕〔S〕】，修飾語在前，中心語在後。

最初，〔數+量〕表明名詞的數量，大多數放在名詞後面，例如：

子光賞貝二朋，子曰貝佳女。(三代言金文存)
孚人萬三千八十一人，孚馬□匹，孚馬卅兩，孚牛三百五十五牛，羊卅八羊。(小盂鼎)
冉子與之粟五秉。(論，雍也)
陳文子有馬十匹。(論，公治長)

春秋以後，〔數+量〕才逐漸出現前置，但條件很有限制，一般只限於度量衡或表容量的量詞，如"一簞飯，一瓢飲"(論，雍也)，"一鉤金與一輿羽"(孟，告子下)，數量兼帶天然單位詞則是後置，先秦只說"馬十匹"，不說"十匹馬"，只說"幄幕九張"，不

說"九張帳幕"。到了漢代前置的用例才漸漸多起來，不但表度量衡或表容量的量詞可以前置，天然單位詞也可以前置，例如：

陸地......千足羊，澤中千足彘。(史記，貨殖傳)
安邑千樹棗，燕秦千樹栗......。(同上)
越使諸發以一枝梅遺梁王。(說苑)

這兩種詞序演變：

【〔S〕〔VP者〕】 > 【〔VP者〕〔S〕】
【名+〔數+量〕】 > 【〔數+量〕+名】

都是：

【中心語 + 修飾語】 > 【修飾語 + 中心語】

2.3 上古〔SOV〕詞序的遺跡

2.3.1 〔Neg + Pr_O + V〕和〔Q_O + V〕

否定詞後面的賓語代詞要前置，賓位的詢問詞也要前置，這兩條先秦漢語的規律<<馬氏文通>>已經注意到了。所謂"前置"，就是著先秦〔SVO〕的一般詞序來說。從漢藏比較的觀點來看〔Neg + Pr_O + V〕和〔Q_O + V〕都是〔SOV〕詞序的遺跡。

下面舉例否定詞的次序是"不"、"未"、"無"、"莫"，代詞包括"我"、"余"、"之"、"己"、"汝"、"爾"、"是"。

貞：祖辛不我壱？ 貞：祖辛壱我？(前1.11.1)
不汝瑕珍。(書，康誥)
豈不爾思？畏子不奔。(詩，王，大車)
居則曰：不吾知也。(論，先進)
不患人之不己知，患不知人也。(論，里仁)
蓋有之矣，我未之見也。(論，里仁)
晉國之命，未是有也。(左，襄14年)
鄰國未吾親也。(國語，齊語)
無我惡兮。(詩，鄭，遵大路)
爾無我詐，我無爾虞。(左，宣15年)

見利之聚，無之去。(呂氏春秋，功名)
莫我肯顧。(詩，魏，碩鼠)
不患莫己知，求爲可知也。(論，里仁)
莫余毒也已。(左，僖28年)

下面是賓位詢問詞在動詞前面的例。

吾誰欺？欺天乎？(論，子罕)
吹參差兮誰思？(楚辭，九歌)
終南何有？有條有梅。(詩，終南)
內省不疚，夫何憂何懼？(論，顏淵)
王者孰謂？謂文王也。(左，隱元年)

2.3.2 "弗/不" 和"勿/毋"

丁聲樹1935(<釋否定詞弗，不>，<<慶祝蔡元培先生六十歲論文集>>)，呂叔湘1941(<論毋與勿>，<<漢語語法論文集>>1955，12-35)指出，"弗，勿"用在他動詞前，"不，毋"用在自動詞前，"弗"="不之"，"勿"="毋之"。

不 + V_t + 之 > 不 + 之 + V_t > 弗V_t
毋 + V_t + 之 > 毋 + 之 + V_t > 勿V_t

上面公式的第一步是"之"字在否定詞後前置。詞序還是〔OV〕時，就不必假設這一步。

2.3.3 〔S + 是$_O$ + V〕和〔Pr$_O$ + V〕

王力(1958：355)指出，前面沒有否定詞，有時賓語代詞也放在他動詞之前，例子都出於先秦最古老的文獻：

〔Pr$_O$ + V〕

民獻有十夫予翼。(<<書，大誥>>；民間賢人有十個協助我。)
惟我事，不貳事；惟爾王家我適。(又，<多士>；天下事已歸屬我們，不再歸屬別國，你殷國也已歸屬我們了。)

赫赫師尹，民具爾瞻。(<<詩，小雅，節南山>>；威嚴的尹太師，老百姓眼睛都看著你。)

除此之外，還有"是"字作賓語用，在金文和<<詩經>>、<<尚書>>可靠的各篇都是前置的，例如裘錫圭(1979：440)所舉金文裡的例：

〔S + 是$_o$ + V〕

懿父迺(乃)是子。(沈子簋；"是"似乎指作器者自己，"子"作動詞用；懿父就把(我)這個(人)當做兒子。)
子孫是保。(陳逆簋；"是"指這件簋；子孫保存這個。)
子子孫孫是尙。(陳公子甗；子子孫孫尊尙這個。)
是用壽老。(毛公[illegible]鼎；用這個長命百歲。)

還有<<詩經>>、<<左傳>>裡的例：

葛之覃兮......是刈是濩，爲絺爲綌。(<<詩，周南，葛覃>>；葛長得長了......割了它來煮煮它，做成細葛和粗葛布。)
疆場有瓜，是剝是菹，獻之皇祖。(<<詩，小雅，信南山>>；......切了它來醃起來，獻給皇祖。)
爾貢包茅不入，王祭不共，無以縮酒，寡人是徵；昭王南征不復，寡人是問。(<<左，僖4年>>；"包茅"，束裹起來的青茅，用來滲去酒裡的渣滓；"共"，供；"縮酒"，滲酒；"寡人是徵"，我要這東西；"寡人是問"，我質問這件事。)

裘錫圭指出，金文和西周、春秋時代可靠的作品，"是"字作賓語用都是前置，到<<論語>>、<<左傳>>等書裡，賓語"是"字的位置已經變爲後置爲常。不過，<<論語>>裡"以"和"用"的賓語"是"仍然是前置的。<<左傳>>由於是根據大量較古的史料編纂而成的，在大量出現賓語"是"後置的同時，也保存了不少賓語"是"前置的句子。除了上面引的"寡人是問"、"寡人是徵"以外，還有"小國是懼"(襄28年)，"商人是因"(昭元年)等。

2.3.4 〔O_i + {是、之}$_i$ + V_t〕

另外一種句式是賓語前置，後面跟著的"是"或"之"複指賓語，再跟著他動詞。下面轉引王力(1958：61)和俞敏<倒句探源>(<<語言研究>>1(1981)，78-82)的例：

> 尹氏大師，維周之氐，東國之均，四方是維，天子是庳，俾民不迷。(<<詩，小雅，節南山>>；尹太師啊，您是周朝的基礎，掌握著國家大權，保護四方，輔助天子，使人民不致迷失方向。)
>
> Oh, Grand-master Yin, you should be the base of Chou; you should hold the ordering of the state; the four regions, them you should unite; the Son of Heaven, him you should (augment:) strengthen; you should cause the people not to go astray...(Karlgren, The Book of Odes, p.133)
>
> 君亡之不恤，而群臣是憂，惠之至也。(<<左>>僖15年；君王不把自己的流亡放在心上，卻還掛念著群臣，眞是仁愛到極點了。)
>
> 愎諫違卜，固敗是求，又何逃焉？(<<左>>僖15年；不聽別人的勸告，違背卜卦所得的預兆，這本來就是找敗仗吃，還逃避什麼呢？)
>
> 今吳是懼而城于郢。(<<左>>昭23年；現在害怕吳國，在郢築起城牆來。)

同樣句式用"之"字複指的例(王力 1958：363)：

> 燕婉之求，得此戚施。(<<詩，新臺>>；想找個如意的丈夫，誰知嫁這樣一個駝背。)
>
> 吾以子爲異之問，曾由與求之問。(<<論，先進>>；我以爲你問別的事呢，你倒是問仲由和冉求的事。)
>
> 非子之求而蒲之愛，董澤之蒲可勝既乎？(<<左>>宣12年；不注意去找回兒子而只是捨不得幾枝箭，咱們董澤的箭材難道還用得完嗎？)
>
> 寡君其罪之恐，敢與知魯國之難？(<<左>>昭31年；敝國君王擔心自己罪過還來不及呢，那裡還敢過問魯國的急難呢？)
>
> 先君之恩，以勗寡人。(<<詩，北風，燕燕>>；恩今先君莊公......)

"四方是維，天子是庳"這樣的句子，以前一直認爲"是"是代詞，複指前面的賓語：

四方	是	維	four regions, them (you should) unite
O_i	是$_i$	V_t	

俞敏(1981：81)提出了一種新的看法。他指出：(1)"是"、"之"作爲代詞，也可以修飾名詞，如"之二蟲"(<<莊，逍遙遊>>；這兩個東西)，"是日"(這天)；(2)藏文有兩個指示代名詞，一個是adi，他認爲和漢語的"之"、"時"相當；另一個是遠指詞 de，和"是"相當；(3)de修飾名詞時是後置，如：

kha-rtsan yonspai mi de ltas byun 我瞧見昨天來的那個人來著
昨天 來 人 那 看見 來著
【〔 〕$_N$DEM】$_O$ V_t

rygal-pos skad-cha yon-dan yod-pa de thos nas
大王 話 道理 有 那 聽 以後
【〔 〕$_N$DEM】$_O$ V_t
聽見大王有理的那句話以後

俞氏認爲"四方是維，天子是庳"裡的"是"，也是後置的指示詞，修飾前面的名詞：

【〔四方〕是】$_O$維$_{Vt}$，【〔天子〕是】$_O$庳$_{Vt}$ 保護這四方，輔助這天子
these four regions, you should unite; this Son of Heaven, you should strengthen

俞氏的說法如果能成立，非常重要。因爲這樣一來，這些例句不僅是〔OV〕詞序，也是〔N-Adj.〕$_N$ 詞序，完全和藏緬語的詞序相同。

2.3.5 〔Pr + CV〕和其他

〔SOV〕詞序的語言，一般是介詞(CV，coverb)後置。這是Greenberg的Universal 4：
With overwhelmingly greater than chances frequency, languages with normal SOV order are postpostional.

因此，〔賓語 + 介詞〕詞序也是〔SOV〕詞序的遺跡。

這類例句先秦文獻中常見，而且在以後的文言裡保留得很久，例如"何以"、"是以"(王力 1958：358-360)，還有(俞敏 1981：80)：

戎狄之與鄰。(<<左>>昭15年)
侈故之以。(<<左>>昭18年)
吾誰與爲鄰？(<<莊，山木>>)
頑嚚是與比周。(<<左>>文18年)

此外還有一些關於"於"和"焉"的例。先秦通常的詞序是〔V + 於 + 處所詞〕，如"于擊磬於衛"(論，憲問)，"於"字前置。但俞敏(<<經傳釋詞札記>>(1987)，10頁)指出，"於"、"焉"也有後置的(參看王力 1958：361-362)：

其一二父兄，私族於謀而立長親。(<<左>>昭19年；謀於私族而立長親；跟私族商量。)
諺所謂"室於怒，市於色"者，楚之謂矣。(<<左>>昭15年；怒於室色於市；在家裡生氣，到街上發作。)
唯蔡於感。(<<左>>昭11年；唯憾於蔡；就是對蔡不高興。)
亡於不暇，又何能濟。(<<左>>昭4年；不暇於亡；對自己的流亡都忙不過來，又怎麼能去幫助別人？)
入而能民，土於何有？(<<左>>僖9年；何有於土)
謝於誠歸。(<<詩，崧高>>；誠歸於謝)

還有"焉"字後置的例(俞敏 1987：26)：

我周之東遷，晉鄭焉依。(<<左>>隱6年；＝依於晉鄭；<<周語>>作"晉鄭是依"；注云："幽王爲犬戎所殺，平王東徙，晉文侯鄭武公左右王室，故曰晉鄭焉依")
誰侜予美，必焉忉忉。(<<詩，防有鵲巢>>；＝忉忉於心)
往來行言，心焉數數。(又，<巧言>；＝數數於心)
今王播棄黎老，而孩童焉比謀。(<<國語，吳語>>；＝比謀於孩童)
何書焉存。(<<墨，非命>>；＝存于何書)
必大焉先，(<<左>>襄30年；＝必先於大)

這些例子的結構都是：
〔賓 + 介〕+ 動詞　　　(室於怒，市於色)

跟先秦常見的詞序有兩點不同。第一、"子路宿於石門"(論語，憲問)、"王坐於堂上"(孟，梁惠王上)這種句子，引進處所的帶"於"字的介詞組在動詞之後。這是先秦的常例。上面引徵的例句，帶"於"或"焉"的介詞組在動詞之前。第二、介詞在介詞賓語之後，這可能是〔SOV〕詞序的遺跡。

總說起來，〔SOV〕詞序的遺跡有以下幾種：

(1)詢問詞前置。代詞在否定詞後要前置。這條包括"弗"、"不"之別和"勿"、"毋"之別。

(2)前面沒有否定詞，代詞也往往前置。其中最多的用例是"是"、"之"這兩個代詞。

(3)"於"、"焉"這兩個介詞放在介詞賓語的後面。

三、

現在回顧一下我們走過的路程。

羅杰瑞提出七個現代漢語的類型特徵。我們把第(6)個 AN詞序擴充爲 修飾語--中心語 詞序，然後分析上古、遠古漢語。初步結論是說：

1. 漢語從最早到現在，語素一直是單音節的。

2. 就其他六個特徵來看--(2)帶聲調、(3)沒有複聲母、(4)缺乏形態或形態薄弱、(5)必須用量詞、(6)修飾語--中心語詞序、(7)SVO詞序--現代漢語和遠古漢語正相反。

反思一下，我們覺得(2)、(3)、(4)、(5)這四項關於遠古的推測是比較可靠的；(6)、(7)兩項因爲缺乏明確的證據，論證時牽強附會，在所不免。但是我們面臨的問題是不可避免的。藏緬語現在的詞序是SOV，NA；漢語是SVO，AN。在共同漢藏語階段，無論是AN還是NA，無論是SVO還是SOV，總會跟現代的一個語支詞序相反。我們假設共同漢藏語的詞序是NA、SOV，於是希望能在上古漢語中找到NA、SOV的痕跡。

就(2)、(3)、(4)、(5)四項結論比較清楚的特徵來看，我們可以說漢語的類型在近三、四千年內發生過很大的轉變。

"類型特徵是可以變化的"這種想法是近四、五十年興起的，也是非常重要的。爲了說明這點，我們不妨回顧一下另一種學說：類型特徵是永恆的，不會變易的。

不久以前流行一種漢藏語系的分類法，其中有兩個語群；一個是藏緬，一個是漢台(王力<<漢語史稿>>上(1957)，27-29頁)。漢台語群包括：

漢語、侗傣語族、苗瑤語族、暹羅語、越南語、其他。

爲什麼這些語言都可以歸入漢藏語系？<<漢語史稿>>(上)說，這些語言都具備聲調，大部份的詞以單音節的詞根爲基礎，而且具有單位名詞(量詞)。這種論證的前提，假設這些類型特徵都是永恆的。既如此，現在帶聲調，用量詞的單音節的各種語言從一開始就是這樣，想來是來自同一個祖先。

這種看法不限於<<漢語史稿>>(上)。A. meillet and M. Cohen, Les langues du monde, 1st ed. (1924)也有類似的看法。

上面討論過漢語史中聲調和量詞的興起。其實單音節也是可以變易的特徵。越南語屬於南亞語。南亞語的語素是多音節的；越南語的近親孟高棉語(Mon-Khmer)的語素，單音節的雙音節的都有；中古越南語也是多音節的。因爲長期受漢語、台語的影響，越南語才變爲單音節的語言。另一個實例是Cham語，原屬多音節的南島語系，現在是單音節的語言。

我們現在的看法是：

> 有親屬關係的各種語言，類型特徵不一定相同。類型特徵相同的各種語言，不一定有親屬關係。

套句中國的老話，東亞、東南亞語言的類型特徵是"性相近，習相遠"。同一語系的語言一開始是類型特徵相同，一旦各自東西，自立門戶，就被鄰近的非同系的語言同化而類型特徵發生轉變。

另外還有一些治漢語史的學者，他們認爲現代漢語的類型特徵是永恆的，可以追溯到遠古。王力先生(<<同源字典>>(1982))就是明顯的例。王力先生認爲上古漢語沒有複聲母，不相信聲調發生說(tonegenesis)。在王先生的上古音系統裡，不可能有不自成音節的s-、m-詞頭，-s詞尾。章黃學派的古音學跟王先生的上古音大同小異。我在別處(梅祖麟1992)已經討論過王力先生的上古音和語源學，這裡不贅。

類型特徵有哪些是比較穩固的，有哪些是比較容易改變的？這是令人困惑的問題。我們上面一方面認爲六個類型特徵在漢語史中曾經發生重大的變化，另一方面針對非漢語卻假設某些特徵沒有多大變化。比方說，我們上面說越南語受了漢語、台語的影響而變成單音節的語言。假設之一是台語一直是單音節的。但如果白保羅(Paul Benedict)的Austro-Thai hypothesis(南島--台假設)能夠成立，台語的前身在某個古代階段該是多音節的。造成困惑的原因之一是漢語歷史悠久，古代文獻豐富，我們可以用典籍中的資料來探索上古漢語。與漢語爲鄰的非漢語，文字記載大多數不早過公元後七、八世紀。要推測這些語言更早的情況，只能假設晚期的特徵可以直溯上古。在方

法上這兩種假設是自相矛盾的。我們下一節討論六個特徵爲什麼在漢語史中發生變化，就是要假設與漢語爲鄰的亞爾泰語、南亞語，它們現代的類型特徵就是遠古(公元前1000-3000年)的特徵。知其不可而爲之，這是應該向讀者說明的。

四、

羅杰瑞(1988：12)給亞洲十八個語言做了類型分析以後說：

> 在地理上，漢語處在兩種語言之間。北邊是不帶聲調、多音節的亞爾泰語，南邊是東南亞典型的帶聲調、單音節的各種語言。從類型的觀點來看，漢語也處在這兩種語言之間。比方說，AN詞序是亞爾泰語系各種語言共同的特徵，漢語也是這種詞序。另一方面，漢語是帶聲調的，而帶聲調是東西亞語言最突出的特徵。

這段話已經含蘊著一種想法：跟漢語毗鄰的語言會影響到漢語，因而使遠古漢語的類型特徵發生變化。

此外，羅杰瑞(1988：18)曾經說明漢語的"犢"字(上古音*duk)借自亞爾泰語；蒙古語 tuγul，滿語 tuksan， Evenki tukučən "小牛"， Lamut tu- ~ tuγu- "生小牛"。<<說文>>裡已有"犢"字。<<史記，趙世家>>記載公元前四世紀趙武靈王說的一句話："今吾將胡服騎射以教百姓"。按照地望推測，趙國東部的胡人也是亞爾泰民族。據此，至晚在公元前四世紀，漢族和亞爾泰民族已經有了接觸。

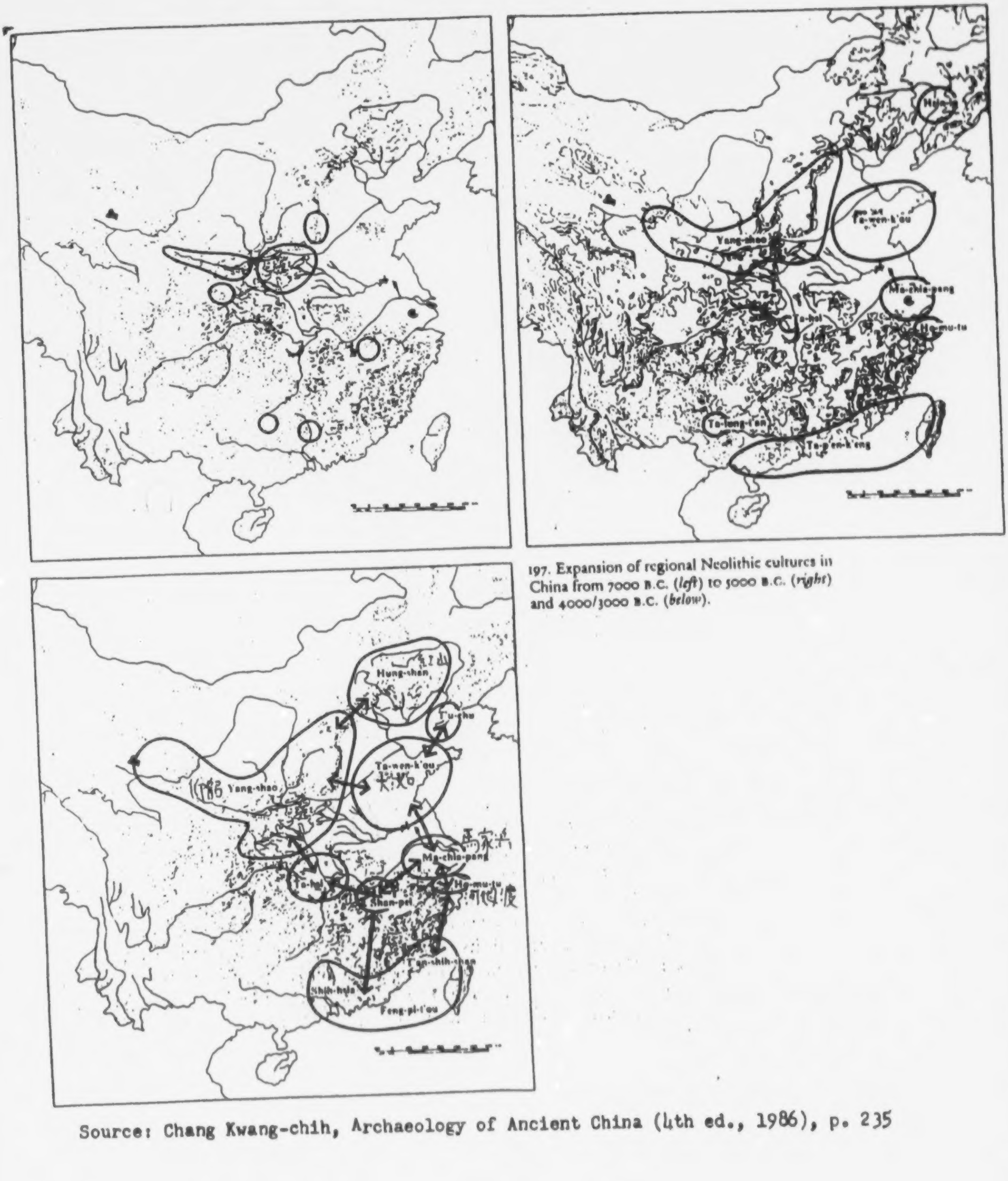
羅杰瑞和我(1976)還曾經說明漢語的"江"字借自南亞語。結論之一是漢族從黃河流域南下以前，長江南岸三角洲的土著民族是南亞族。漢族渡江南下是周初，公元前一千年左右；"江"字最早出現於金文和<<詩經，江漢>>。據此，漢族和南亞族接觸最晚是公元前十世紀。

這裡還有個年代的問題。上面所討論的六個類型特徵的演變，粗略地估計，該是發生在公元前2000-0年。那麼，如果沒有其他證據可以說明那時漢族已經和亞爾泰、南亞等等非漢族接觸，我們就不能用非漢語的類型特徵來解釋漢語類型特徵的變遷。

在這方面考古學給我們幫了個大忙。張光直(Chang Kwang-chih, Archaeology of Ancient China (4th edition), p.234 ff)認爲新石器時代，一直到公元前5000年，在中國境內有六個獨自發展的文化，互不往來。到了公元前4000-3000年，這六個文化突然互相

接觸，互相影響，形成華夏交流圈(Chinese Interaction Sphere)。下頁轉錄張書235頁的三個地圖。其中有四個文化特別值得注意。

	地區	民族(本文假設)
仰韶	黃河流域	漢族
紅山	遼河流域	亞爾泰族
馬家濱，河姆渡	長江三角洲	南亞族
大汶口	山東半島	南亞族(？)，南島族(？)


Hsin-lo
Yang-shao
Ta-wen-k'ou
Ma-chia-pang
Ho-mu-tu
Ta-hsi
Tu-lung-t'an
Ta-p'en-k'eng
紅山
Hung-shan
Tu-chu
大汶口
仰韶
Yang-shao
馬家浜
河姆渡
Shan-pei
T'an-shih-shan
Shih-hsia
Feng-pi-t'ou

197. Expansion of regional Neolithic cultures in China from 7000 B.C. (*left*) to 5000 B.C. (*right*) and 4000/3000 B.C. (*below*).

Source: Chang Kwang-chih, Archaeology of Ancient China (4th ed., 1986), p. 235

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下面再轉錄羅杰瑞(1988：11)的亞洲語言的類型特徵表。

	1 單音節	2 有聲調	3 無複聲母	4 少形態	5 〔量〕+〔名〕	6 A+N	7 SVO
現代漢語	+	+	+	+	+	+	+
古代漢語(羅杰瑞)	+	?	—	+	—	+	+
遠古漢語(梅祖麟)	+	—	—	±	—	—	—
台語(暹邏語)	+	+	—	+	+	—	+
黎語	+	+	—	+	+	—	+
越南語	+	+	+	+	+	—	+
高棉語	—	—	—	±	+	—	+
苗語	+	+	—	+	+	—	+
瑤語	+	+	—	+	+	—	+
藏文	+	—	—	—	—	—	—
彝語	+	+	+	+	+	—	—
景頗語	—	+	—	+	—	—	—
馬來語	—	—	+	—	—	—	+
魯凱語(台灣高山族)	—	—	+	—	—	+	—
蒙古語	—	—	+	—	—	+	—
滿州語	—	—	+	—	—	+	—
維吾爾語	—	—	+	—	—	+	—
朝鮮語	—	—	+	—	—	+	—
日本語	—	—	+	—	—	+	—

亞洲語言的類型特徵 Source: Jerry Norman, Chinese, p.11

現在我們來說個故事。

漢藏語族本來住在中國西部青海一帶。其中有一支東遷，來到渭水、黃河流域。最初他們還跟藏族、西夏族維持相當密切的聯系。久而久之，他們往東伸張，和藏緬族日益疏遠，同時也處在亞爾泰民族和南亞民族之間。這就是漢族的祖先。

一直到公元前5000年，當時地廣人稀。生活在現在中國疆土的諸民族還沒有什麼接觸。突然間，從公元前四千年到三千年開始，漢族和其他民族的交往漸趨頻繁。於是，漢語本身也起了巨大的變化。

跟亞爾泰語言接觸的結果是：(1)漢語的複聲母開始簡化，到了漢代，喪失殆盡。我們看亞洲偏南的語言，無論是藏緬語支的還是非藏緬語支的，差不多都有複聲母：台語、高棉語、苗瑤語、藏文、景頗語。由此可知這是區域性的特徵：越靠北越沒有複聲母。(2)因爲複聲母受到侵蝕，s-、m-、(N-)等原有的詞頭，也失去它們的音韻基礎。(3)漢語從漢藏語的 N-A詞序變成 A-N詞序，但是在現代的南方方言還保存著"豬公、豬母"之類的說法，這是 N-A詞序的遺跡。漢代和匈奴時戰時和，匈奴有相當多的亞爾泰成份在內。而漢代正是詞序演變的時代：從【S〔VP者〕】變成【〔VP者〕S】，從【名+〔數+量〕】變成【〔數+量〕+名】。

跟南亞語以及其他南方語言接觸的結果是：(1)產生聲調。藏緬語支、南亞語系都有些語言沒有聲調，或者正在產生聲調。所以這兩種語言不像是聲調的發源地。聲調的原產地可能是台語，也可能是漢語本身。目前我們不知道漢語的聲調是本身發展出來的，還是受台語影響而產生的；但大致可以肯定漢語之所以有聲調跟上古漢語不南不北的位置有關。(2)-s變成去聲後，加-s的構詞法就變成四聲別義。(3)從西漢到南北朝，量詞的類別增多，用法漸趨嚴密。(4)詞序從SOV變成SVO。促成這種變化最可能是南亞語。南亞語系的語言一般是SVO，但是印度東北部的Munda語是SOV，跟周圍的Dravidian語一樣。Gerard Diffloth認爲 Munda可能是從更古老的SVO變成後起的SOV("Austro-Asiatic Languages", in Encyclopaedia Britannica (1975), 2:483e)。果眞如此，南亞語原始的詞序是SVO，馬家濱、河姆渡的南亞民族在公元前4000-3000年已經跟中原的漢族接觸。這可能是漢族從SOV轉爲SVO的原因。

從歷時和跨語系比較(crosslinguistic comparison)的觀點來看，現代漢語是個三不像的語言。它缺乏形態，又用AN、SVO詞序，所以在漢藏語系中是個異類。它一方面又像北鄰亞爾泰語(無複聲母，AN詞序)，另一方面又像南邊的毗鄰語言(帶聲調，用量詞，SVO詞序)。換句話說，漢語是個兼容的語言，在歷史過程中吸收了鄰近語言的特徵。

漢代的人口有五千多萬，比整個羅馬帝國的人口還多。漢代的人口當然有不少非漢族在內，但漢族在漢代已是世界上人口數一數二的民族。漢族怎麼會人口那麼多？其中因素很多：農業發達得早，城市化發生得早，又有文字、嚴密的政治組織。另一個因素是漢人中有不少是漢化的非漢族。一個兼容的文化才能同化鄰近的民族。在漢語的類型轉變中我們看到漢語的兼容、應變能力。也許可以說，華夏民族是融合中國境內各種民族而形成的，漢語是吸收鄰近語言的類型特徵然後定型的。

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SOME REMARKS ON WORD ORDER AND WORD ORDER CHANGE IN PRE-ARCHAIC CHINESE

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ABSTRACT

Since the 1970s, following the work of Greenberg (1966) on language universals, the problem of word order and word order change in Chinese has been much debated. The discussions have been essentially surrounding the hypothesis of Li & Thompson (1974) according to which Pre-Archaic Chinese (12th century B.C.) was a SOV language, which might have changed to a SVO one between the 10th and 3rd centuries B.C., before shifting back to SOV again, the last stage being still in action: a) SOV > b) SVO > c) SOV.

The hypothesis SVO > SOV has been much criticized, especially by those (Light 1979, Sun & Givon 1985) who try to show that, synchronically, Chinese is and remains a SVO language and that the OV order is a marked [+ contrastiveness] order. However, very few scholars have challenged the first change a) SOV > SVO in Archaic Chinese, because a SOV order in Pre-Archaic Chinese seems more plausible, insofar as this order is sometimes found in Classical Chinese (Early or Late Archaic Chinese) for pronominal objects under special conditions (especially when these pronouns are interrogative or in negative sentences), or even for full lexical NP, when they are followed by pretransitive markers *shi* or *zhi*.

It has therefore been supposed that these phenomena - even if they are minor - are relics of an ancient stage of the language, and that the regular word order must have been SOV. This opinion appears all the more to be probable to some that the language of the oracle bone inscriptions seems to reveal many more preverbal objects or preverbal PP than during the following stages, i.e. Early and Late Archaic. From here, some have perhaps too hastily concluded that Proto-Chinese must have been SOV and, therefore, Proto-Sino-Tibetan also. Indeed, all the Tibeto-Burman languages (except Bai and Karen) have verb-final order.

This paper will show that the hypothesis of a) (SOV > SVO) change is not empirically motivated. Any meticulous analysis of the language of the oracle-bone inscriptions, as the one which has just been completed by Shen Pei (1992), does not allow the conclusion that Chinese was more SOV in Pre-Archaic than in Early or Late Archaic. The *jiaguwen* language shows a regular order of SVO. To suppose that in a more ancient stage than the one we know today the regular order could have been SOV is, under these conditions, of pure surmise.

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SOME REMARKS ON WORD ORDER AND WORD ORDER CHANGE IN PRE-ARCHAIC CHINESE

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0. Introduction

0.1. Since the 1970s, following the work of Greenberg (1966) on language universals, the problem of word order and word order change in Chinese has been much debated. The discussions have been essentially surrounding the hypothesis of Li & Thompson (1974) according to which Pre-Archaic Chinese (12th century B.C.) [1] was a SOV language, which might have changed to a SVO one between the 10th and 3rd centuries B.C., before shifting back to SOV again, the last stage being still in action:

(1) a) SOV > b) SVO > c) SOV

0.2. The hypothesis of changing from b) to c) relies essentially on the following facts: PP, which were usually post-verbal in Classical Chinese, have become mostly pre-verbal today, and the ba construction (where ba is a pre-verbal direct object marker), non-existent in Archaic and Pre-Medieval Chinese, is increasingly in use in Contemporary Chinese. The path of change, purely internal, might have been the following: the serial-verb structure "S+V1+O+V2" might have changed into a single-verb structure "S+Prep. (or marker) +O+V" after a classical process of grammaticalization changing the verb into a preposition or a marker. [2]

This hypothesis has been much criticized, especially by those (Light 1979, Sun & Givon 1985) who try to show that, synchronically, Chinese is and remains a SVO language and that the OV order is a marked [+ contrastiveness] order. [3]

0.3. However, very few scholars have challenged the first change a) SOV > SVO in Archaic Chinese, because a SOV order in Pre-Archaic Chinese seems more plausible, insofar as this order is sometimes found in Classical Chinese (Early or Late Archaic Chinese) for pronominal objects under special conditions (especially when these pronouns are interrogative or in negative sentences), or even for full lexical NP, when they are followed by pretransitive markers shi 是 or zhi 之. [4] We even find objects of prepositions before some prepositions. [5]

It has therefore been supposed that these phenomena - even if they are minor - are relics of an ancient stage of the language, and that the regular word order must have been SOV. This opinion appears all the more to be probable to some that the language of the oracle bone inscriptions seems to reveal many more preverbal objects or preverbal PP than during the following stages, i.e. Early and Late Archaic. From here, some have perhaps too hastily concluded that Proto-Chinese must have been SOV and, therefore, Proto-Sino-Tibetan also. Indeed, all the Tibeto-Burman languages (except Bai and Karen) have verb-final order. [6]

0.4. I will show that this hypothesis of a) (SOV > SVO) change - which was probably first suggested by Wang Li, who was comparing Archaic Chinese, with its preverbal pronominal objects, with French - is not empirically motivated. Any meticulous analysis of the language of the oracle-bone inscriptions, as the one which has just been completed by Shen Pei (1992), does not allow the conclusion that Chinese was more SOV in Pre-Archaic than in Early or Late Archaic. The _jiaguwen_ language shows a regular order of SVO. To suppose that in a more ancient stage than the one that these first documents are available to us, that the regular order could have been SOV is, under these conditions, of pure surmise.

In the following account, I will make a distinction between object order and PP order, i.e. between the sequence SOV vs SVO and the sequence S PP V vs S V PP.

1. The place of the objects

I will distinguish between pronominal objects from full lexical NP objects.

1.1. Full lexical NP-objects

When the object is a full lexical NP, the basic order is undoubtedly SVO. Everybody will agree with this statement. Having said this, one has to admit that there are situations which need more discussion. One also finds in _jiaguwen_ examples of the type :

(1) 三 百 羌 用 于 丁
san bai qiang yong yu Ding
three hundred Qiang use-for-sacrifice to Ding
Three hundred Qiang have been used for sacrifice to Ding.

One would see in such sentences a (S)OV order. Indeed, the current analysis (Guan Xiechu 1953, Chen Mengjia 1956, Chen Chusheng 1991) is the following : DO (Direct Object) + Verb + Preposition + IO (Indirect Object). Therefore, there should also be in the language of _jiaguwen_ an OV structure - certainly exceptional, but non the less existent - co-occurrent with the basic (S)VO order.

Tang Yuming (1990) and Shen Pei (1992) are the only ones who talk about subject-patient sentences (_shoushi zhuyu ju_) (in other words, the pre-verbal NP should not be an object but a subject-patient) existent in Chinese, of all stages (archaic, medieval, contemporary). [7] I think they are right. As emphasized by Shen Pei, these sentences have effectively the following characteristics : (i) if a subject-agent is present, it is placed between the patient and the VP ; (ii) the negative form of such sentences is : "patient + negation + verb". These characteristics differentiate them from preverbal noun-object sentences, where the subject is in initial position and where the adverb of negation is in front of the noun-object.

Sentences (1) (2) are therefore not of pre-verbal object , but of subject-patient.

1.2. Full lexical NP-objects introduced by hui and wei

There also exists in the language of the oracle-bone inscriptions a "(S) + hui 叀 (or wei 隹) + O + V" form for affirmative cases and "(S) + Negation + wei + O + V" for negative cases. And these particles hui and wei have been interpreted as pre-verbal markers, like yi 以 in Classical Chinese, or ba 把 /jiang 將 in Medieval and Contemporary Chinese (Guan Xiechu 1953, among others). Examples:

(2) 叀黑羊用有大雨 (合集：30300)
hui hei yang yong you da yu
hui black sheep utilize-for-sacrifice there-is big rain
(If we) utilize a black sheep for sacrifice, there would be abundant rain.

(3) 王勿隹龙方伐 (殷墟文字丙编：0241)
wang wu wei Long fang fa
king negation wei Long tribe fight
The king will not fight the Long tribe.

Such an analysis is problematic. Other than the fact that there is no reason for analyzing san bai qiang as an subject-patient in (1) and hei yang as an object in (2) (they are indeed of the same type of sentences, no matter whether hui is present or not), it is clear today that hui and wei are not simple markers of pre-verbal objects, as one may think, but focalizers serving to stress the constituent they follow, this constituent being an object, or a subject, or even an adverbial.[8]

(4) 隹帝肇王疾 (Djamouri 1988: 245)
wei Di zhao wang ji
wei God provoke king illness
It is God who has provoked the illness in the king.

In this last sentence, it is the subject which is focalized. That hui and wei could thus introduce constituents other than the objects, proves that hui and wei are not simple markers of pre-transitive objects.

Thus, sentences (2) and (3) should be understood as: "(if) it is a black sheep which is utilized, there would be abundant rain" and "It is not the Long tribe that the king has to fight". In (2) hui focalizes the subject-patient hei yang and in (3) wu wei focalizes the object Long fang. Another example with an object focalized with hui in an affirmative sentence:

(5) 王叀土方征 6442)
wang hui Tufang zheng
king hui Tufang leave in expedition
It is against the Tufang that the king leaves in

expedition.

These sentences of pre-verbal object preceded by hui/wei are therefore not unmarked sentences, but marked by a focalization of the object. These are nonetheless sentences with pre-verbal objects. One therefore has to admit that the language of the oracular bone inscriptions, when it wants to focalize an NP-object, uses two devices : (i) put in front of the said object a marker of focalization ; (ii) move it, with its marker, in pre-verbal position. In the absence of hui/wei, the order remains of course (S)VO.

I would nonetheless like to emphasize here that the Pre-Archaic is not different here from the EAC or even from the LAC which uses markers of focalization shi 是 ou zhi 之 behind (and not in front of) the objects, before moving them in pre-verbal position. It is therefore unreasonable to think that the Pre-Archaic shows more (S)OV order than the Early/Late Archaic, at least in this problem of preverbal objects introduced by markers of focalization. It seems that the contrary is the truth.

Huang Dekuan (1988) remarks indeed that this "hui/wei+O+V" form is present in all periods of the oracle bone inscriptions, but he also notes that the examples are more numerous in the inscriptions of the last period; and that since the 11th century B.C., wei could replace hui in the affirmative sentences. [9]

The subsequent evolution might have been the following: in the bronze inscriptions (11th-8th c. B.C.), wei had almost entirely replaced hui, then an intermediate form appeared: "wei+O+shi 是 +V", which immediately left its place to "O+shi+V"(all these forms are attested in the Shang shu, 10th-8th c. B.C.), which itself would be later on replaced by "O+zhi 之 +V". [10]

No matter what the evolution was, one thing seems to be quite certain today: markers hui and wei in Pre-Archaic were focalizers, contrastive markers. It is also the case in Early and Late Archaic Chinese for shi and zhi. It is therefore not reasonable: a) to speak of a natural, unmarked SOV order while the object were preceded by such markers, b) to suppose that the Pre-Archaic was more SOV than Early/Late Archaic, in that respect.

1.3. Pronouns-objects

What about pre-verbal pronouns which were not introduced by markers? The situation is the same. Pre-Archaic was not more SOV than Early/Late Archaic Chinese.

We know that in Classical Chinese pronoun-objects are usually pre-verbal when they are in negative sentences, or when they are interrogative pronouns in interrogative sentences as well. Ex. :

(6) 今予惟不尔杀（尚书：多方）
jin yu wei bu er sha
now I for-the-moment negation you kill
Now, for the moment, I won't kill you.

(7) 吾谁欺（论语）
wu shei qi
I who abuse

不吾知也（论语）
bu wu zhi ye
negation I know particle

Whom I abuse? (He) does not know me.

They become post-verbal, as the NP-objects already were, later, some time during the Han.

For the JGW, Guan Xiechu (1953) considers that the pronoun-objects are pre-verbal in the same conditions as in Classical Chinese. Chen Mengjia (1956), on the other hand, thinks that the constraints are stricter : it is necessary a) that the negatives should be those in bu 不 ; b) that the pronoun should be wo 我 .[11]

He indeed seems to be correct. Examples :

(8) 帝不我其受祐 (合集：6473)
Di bu wo qi shou you
God negation we modal-particle give assistance
God will not give us assistance.

In this example, the pre-verbal pronoun-object is the indirect object of a double-object construction. More examples with single objects are:

(9) 帝不我熯 (合集：10174)
Di bu wo han
God negation we dry-up
God will not dry up us.

(10) 祖辛不我害 (合集 95)
Zu Xing bu wo hai
Ancestor Xing negation we harm
Ancestor Xing will not harm us.

There are also some cases there the pronoun is not wo and where the negation is not bu, but these are extremely rare :

(11)
wu yu hai
negation I harm
(He/They) will not harm me.

Shen Pei (1992: 23) has found 64 negatives with preverbal pronoun-object: among these, 57 use the negation bu and the pronoun wo, 4 the negation bu and the pronoun yu, 2 the negation wu and the pronoun yu, 1 finally the negation bu and the pronoun er. One thing is certain: the preverbal pronoun-objects are always personal pronouns, never demonstratives, just the same as in Classical Chinese.[12]

The first conclusion that one can draw is the following : there are indeed preverbal pronoun-objects in the language of the oracle bone inscriptions, but they are probably rarer than in Archaic Chinese; they are indeed only limited to personal pronouns (demonstrative pronouns are excluded from this structure) and they concern almost exclusively the one pronoun wo in the negatives with the sole negation bu.

Moreover, the inscriptions of the first period also show that these pre-verbal pronouns-objects, even in negative sentences, could also be postverbal. It is almost always the case when the negative is not bu, naturally, but also sometimes when the negative is bu.

Finally, as Djamouri (1988: 462) points out, the negative bu could be equivalent to bu wei, meaning "it is not". If this hypothesis is correct, the preverbal object-pronouns in the jiaguwen would have to be interpreted as always focalized and the sentences (8) to (10) be translated as : "It is not to us that God is going to give assistance" (8), "It is not us whom God will dry up" (9), "It is not us whom Ancestor Xing will harm" (10).

1.4. Conclusion

The situation of the Pre-Archaic language could therefore very well have been the following: (i) the regular, unmarked order was SVO; (ii) there was also an inverse order SOV, but this order was marked (the object was stressed, introduced by a marker of focalization hui or wei); (iii) in the negative sentences with bu, however, when the object was the personal pronoun wo, the focalizer hui or wei was not necessary. From marked, these sentences became progressively unmarked, giving birth to an unmarked SOV order. Thus, pronouns could not have been conservative of an ancient order, as it is usually believed, but, on the contrary, initiators of a new order which, subsequently, had never been successful in imposing itself for the full-fledged lexical NP. [13]

Now let us look at the PP order in the language of jiaguwen.

2. The place of the PPs

One usually considers that the PP, mostly preverbal in contemporary Chinese, were postverbal in Classical Chinese. However, criticizing Li & Thompson (1974), many linguists (Huang 1978, Li 1980, Sun 1991) have noted that PP are far from being all postverbal in Classical Chinese (Early/Late Archaic). Thus, for the two common prepositions yu 于 and yi 以 , if the first is essentially postverbal (proportionately more than 90 % of the cases), the second is basically preverbal (according to Sun 1991, only 12 % of yi occur in a postverbal position). [14]

2.1. What then was the situation in the language of the oracle bone inscriptions? The situation is even more complex. Both Guan Xiechu (1953) and Chen Mengjia (1956) consider that the natural order is (S)+V+PP. Wang Li (1958: 368) on the contrary thinks that in this period the order was not well fixed and that the locative PP could be either preverbal or postverbal, while admitting that the postverbal cases are more frequent.

Only the preposition yu is present in considerable frequency. [15] The yu-PP, as already noticed, are essentially postverbal, but the examples of preverbal yu-PP are not rare (many more than in Classical Chinese), which could suggest that before the jiaguwen period, Chinese had perhaps been a language where the PP were preverbal (cf. Wei Pei-chuan, forthcoming).

I will try to show that this induction is very questionable. Shen Pei (1990, 1992) shows convincingly that it is necessary, if one wants to see more clearly, to distinguish PP [+ time] from the other PP, PP [- time].

2.2. The place of the yu-PP [- time]

The yu-PP [- time] are mostly postverbal, as in :

(12) 王 往 于 敦 (合集：7948)
wang wang yu chun
king go to suburb
The king went to the suburbs.

However, sometimes, especially when the preposition yu is not the dynamic locative preposition meaning "to" (dao 到 in Contemporary Chinese) but the static locative preposition meaning "at" (zai 在 in CC), or when yu is not a locative preposition but a dative one, the yu-PP can be either postverbal or preverbal. Example of a preverbal yu-PP:

(13) 于 父 甲 桒 (合集：27348)
yu Fu Jia sui
to Father Jia ask-for
It is to Father Jia that (we have to) ask for.

It is better, however, to say, as the translation of (13) indicates, that the preverbal yu-PP are then marked; they are stressed, focalized. Cf. Chen Mengjia (1956), Shen Pei (1992).

Shen Pei cites several examples, in context, where it is obvious that the PP are focalized. He adds that it is probably difficult to show that all the preverbal PP [- time] are focalized, but it is impossible to show that they do not express emphasis.

Thus, yu-PP [- time] are postverbal in unmarked utterances and preverbal while they are put into emphasis, i.e. in marked utterances.

2.3. The place of the yu-PP [+ time]

The yu-PP [+ time] have a different behavior. They can be either postverbal or preverbal, but the preverbal ones are more numerous. They then can be, of course, marked, stressed, or focalized; however, for most cases, they are unmarked, and not focalized. Ex.:

(14) 于 大 禄 日 酒 (屯：3676)
yu da X ri jiu
at Da X day perform-wine-sacrifice
Perform the wine sacrifice at the Da ? day.

(15) yu ren wang qi tian 于 壬 王 其 田 (合集：29245)
at Ren king modal-particle hunt
At the Ren day, the king will go hunting. [16]

This is a situation very different from the one that has just been discussed for PP [- temps]. However, one would be wrong to draw the conclusion that the PP [+ time] might all be preverbal in a stage of language prior to the one represented by oracle-bone inscriptions.

Indeed, as Shen Pei (1990) has noticed, in the most ancient inscriptions, those of the first period, which can de dated at the latest to the last decades of the Wu Ding reign, the time PP in yu are postverbal, as in:

(16) 酒 廿 岁 于 庚 寅 (屯：4318)

jiu sheng sui yu gengyin
wine-sacrifice elevatory-sacrifice immolating-sacrifice at Gengyin
The wine, elevatory and immolating sacrifices (will be) at Gengyin day.

After having remarked that nouns of time, in these ancient inscriptions are also sentence final or sentence medial, Shen Pei naturally concludes that there was an order change in the language of oracle-bone inscriptions, from "V+PP" to "PP+V" when the PP were time PP, and that the other PP remained postverbal. In other words, the order of the PP, in the most ancient stage we know, was indeed "V+PP".

2.4. Conclusion

PP were originally all postverbal. Those of time were the first to change. They became preverbal, since the time of the oracle bone inscriptions. The other PP [- time] remained mostly postverbal, at least in unmarked utterances. Preverbal PP [- time], exist naturally, but they express a focalisation, they are marked. Preverbal PP [- time] not expressing focalisation, i.e. those which are not marked, are dated after the jiaguwen.

3. Conclusion

3.1. In conclusion, a meticulous study of the jiaguwen language does not allow to assert that SOV or S+PP+V preverbal orders are found in greater numbers than in stages posterior to the language of the oracle bone inscriptions, Early or Late Archaic Chinese. Therefore, there is no evidence to justify the hypothesis of SOV > SVO or S+PP+V > S+V+PP changes in Archaic Chinese. Such a hypothesis has been formulated by many linguists to explain certain SOV orders (particularly in the case where the objects are interrogative pronouns, or simple pronouns in the negatives) or S+PP+V orders (especially when the PP are introduced by yi).

3.2. If there were changes, these were rather changes of an opposite nature which had taken place, that is SVO > SOV or S+V+PP > S+PP+V. Indeed, the first of these changes concerned personal pronoun objects, which were effectively postverbal, like all the other objects, but which became preverbal in the negatives. The second change concerned the PP [+ time], which were also postverbal as the other PP, but which had become preverbal.

These changes were never imposed to marginalize the old orders.

3.3. One cannot, of course, make any final conclusion from here that Proto-Chinese was SVO and not SOV. The jiaguwen language does not represent Proto-Chinese. It is not impossible that in stages prior to jiaguwen, which are unknown to us, the language shows a SOV order. One can make such a hypothesis by arguing that several marked and marginal orders, in the jiaguwen language, reflect such an order. We know that the irregularities are often relics from the past and that, as said Meillet, "la grammaire comparee doit se faire en utilisant les anomalies bien plus que les formes regulieres". [17]

What we still have to deal with is that if the exceptional SOV and S+PP+V order of *jiaguwen* were relics of an ancient general SOV, it is not likely that these "relics" were *marked* utterances. The marked utterances, in the history of a language, are indeed new. It is unlikely also that these marked utterances, in *jiaguwen*, if they were really relics from an ancient order, could be found in lesser quantities than in the periods following the Pre-Archaic, i.e. Early and Late Archaic Chinese.

3.4. Whatever the order of Proto-Chinese, one thing is sure. The *jiaguwen* language does not give the least indication which could justify in any way that Proto-Chinese might have been SOV. The contrary is more likely.

Footnotes

1. What I mean by Pre-Archaic Chinese is the language of the oracle-bone inscriptions (*jiaguwen*), 14th-11th centuries B.C. The other periods are : Early Archaic Chinese, 10th-6th c. B.C., Late Archaic Chinese, 5th-2nd c. B.C., Pre-Medieval Chinese, 1st c. B.C. - 1st c. A.D. For the justification of this periodization, see Peyraube (1988a).

2. Such cases of grammaticalization have been analyzed by Peyraube (1988b).

3. For a good review of this long-winded debate on word order and word order change in which historical syntax was formerly entangled, see Qu Chengxi (1984) where the arguments raised by Li & Thompson (1974, 1975) Tai (1973, 1976) in favor of a change SVO > SOV are discussed in detail, as well as the arguments given by Light (1979), Mei Kwang (1980) against such a change. See also Huang Shuan-fan (1978), Li Mengchen (1980), Travis (1983), Hashimoto (1984), Sun & Givon (1985) and Wang Mingquan (1988).

4. See Yu Min (1981), Yang Bojun (1982), Yin Guoguang (1985).

5. Sun Chaofen (1991) has found cases where the object of prepositions *yu* 于 and especially *yi* 以 was sometimes pre-prepositional, without the necessity of any marker, or of the object being a pronoun. In other words, the "prepositions" are in fact postpositions.

6. See LaPolla (1990, chapter 5; 1993), Sun Chaofen (1991).

7. For the notion of subject-patient, put forward by Zhu Dexi, see Lu Jianming (1986). The only difference between the *jiaguwen* language and that of the posterior periods is the following: in Ancient Chinese the VP is rarely a simple verb while it is the case in the oracle-bone inscriptions.

8. See Djamouri (1988), Huang Dekuan (1988), Zhang Yujin (1988) and Shen Pei (1992).

9. See also Huang Tianshu (1991).

10. See Yin Guoguang (1985).

11. In fact, in Classical Chinese, things are not as simple. Zhou Guangwu (1959) has done an exhaustive study on the pronoun-objects pre-verbal in the negatives of several works of Early/Late Archaic Chinese, and has concluded that the situation is relatively complex. It depends on the nature of the pronouns and of that of the adverbs of negation. He also agrees with the two constraints raised by Chen Mengjia (1956).

12. Djamouri (1988) has also noted that the object pronouns are rarer than subject pronouns. He quotes the following figures : 97 object pronouns *wo* for 315 *wo* subjects, 6 objects *yu* for 152 *yu* subjects.

13. It is probably true that in Romance languages the SVO to SOV order change affected full NPs before object clitics, but this is far from being a general phenomenon. Steele (1977) argues against the conservative nature of clitic pronouns on the basis of reconstructed changes in Uto-Aztecan. Similarly, in Modern Greek, we have postverbal full NP objects and preverbal clitic objects, but these citic objects arose long after Greek had undergone its SOV to SVO change. See Lightfoot (1979: 152).

14. These figures should be taken with precaution insofar as they were established from one single chapter from *Mengzi* and one single chapter from *Zuo zhuan*. See also Peyraube (1988a) who finds, for the same period (Late Archaic), that 70 % of *yi*-PP are preverbal against 30 % postverbal, but only in double-object constructions.

15. Other prepositions are *zi* 自 and perhaps *zai* 在 and *cong* 从, but they are less frequent. I will discuss here only the place of the *yu*-PPs.

16. In this last example, the subject is between the PP [+ time] and the VP, but usually the subject appears in the initial position.

17. See LaPolla (1992).

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Formosan clause structure: transitivity, ergativity, and case marking

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1. Prologue

> In the beginning was Greenberg. And Greenberg saw that the tongues of the earth were many, and that the generative descriptions of them were few. And Greenberg said, "Let us go out into the fields and into the libraries, even into the dim studies and into the musty sandalboxes full laden with dataslips that lie therein, and let us make sweet-smelling order from amongst the unruly data collections that rest upon the face of the earth, and let us make graven generalizations in accordance with the configurations that are made manifest by our labors."

And that is how modern linguistic typological research began.

2. Function-based typology

What Greenberg was up against was vast amounts of observations made from the point of view of utterly inconsistent descriptive frameworks, or from the point of view of the observers' unstated and frequently unrealized preconceptions. It would have been nice if he had had at his disposal a thousand complete and explicit descriptions of typologically diverse languages, all stated within the same formal and constrained and proven grammatical framework by trained and competent and experienced researchers, but he didn't. He was faced with the choice of either waiting for the linguistic millenium or doing something with what he had available.

His decision, as we all know, was to go ahead. Since he didn't have formally consistent descriptions to work with, he had to create workable categories that he could superimpose on the data and use to extract generalizations from it, and the categories he chose, not surprisingly, were rather subjective and intuitive semantic ones. As William Croft notes,

> `We are attempting to determine the universal properties of relative clauses (RCs) by comparing their syntactic form in a large number of languages. To do this it is necessary to have a largely syntax-free way of identifying RCs in an arbitrary language. Our solution to this problem is to use an essentially semantically based definition of RC. (Keenan and Comrie 1977:63). ' (Croft 1990:12)

Since Greenberg was, I assume, a native speaker of English with an education in the American school system, the intuitions he drew on in creating his categories were anglocentric ones, and since most or all of the researchers who applied them were also speakers of English, it isn't surprising that the categories seemed natural and intuitive to them too, and that they were able to apply them with a good degree of consistency.

I think that this was great as a temporary expedient. It was nice to have categories like Greenberg's `subject' and Comrie's and Dixon's S, A, and P/O and Keenan and Comrie's `case hierarchy' to facilitate discussions of data among linguists who didn't share a common theoretical conceptual grid. However, that should have been just an intermediate step, pending the development of the consistent and explicit and constrained frame of reference which would make possible a more rigorous and theoretically well founded comparison. As the results started coming in, the original categories should have been revised to compensate for the original English bias, and a set of empirically founded natural categories should have evolved which could have served as one of the pillars of a realistic universal theory of language.

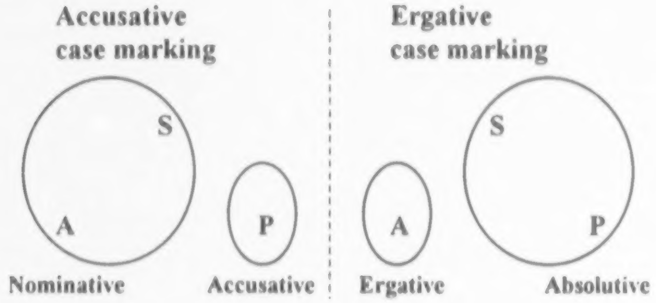
However, this was not to be. Instead, in the vacuum created by the theory wars of the 60's and 70's, this anglocentric and unformalized `functional' approach to language comparison took on a life of its own. Categories like `subject', S, A, and P, originally created as situational roles for establishing functional correspondences among the diverse linguistic structures that encoded these roles, became increasingly regarded as syntactic constructs in some assumed universal but never formalized theory of language.

The consequence of this approach in the area of syntax at least has been a typological framework that regards all languages in effect as more or less radical deviations from the prototype language, English. The most striking example of this has been the treatment of ergative languages. Of the exceptions to various universals proposed in the anglocentric functional approaches to typology, a statistically significant number of them can be placed at the doorstep of ergativity. Ergative languages have been knocking with increasing insistence on the door of linguistic theory, and I think that it is fitting that here in Taiwan, the homeland of one of the biggest and most ergative language families in the world, the Austronesian family, we should open that door, welcome them in, and draw the benefits from the precious gifts they bring with them.

3. Problems with the functional approach to syntactic typology

What's wrong with S, A, and P? Two things: (1) pseudotransitives and (2) disjunctions. First of all, we here are all familiar with the pattern that is often presented to syntax students in describing the difference between ergative and accusative languages:

Figure 1)



So what's wrong with that? The answer is in the part that's missing. An accusative language groups Ss (`intransitive subjects') together with As (`transitive subjects'), it is said, while an ergative language groups Ss (`intransitive subjects') together with Os (`transitive objects') (Dixon 1979:59). The identification of S is fairly though not completely straightforward: if we can identify a large class of sentences which contain only one NP, we are fairly safe in calling that `S'. But what about A and P? If we can identify a class of transitive sentences, then picking out the A and the P will not be so hard, but as Hopper and Thompson have shown us so vividly, semantic transitivity and syntactic transitivity, though linked together in intricate ways, are <u>not</u> the same thing. Semantic transitivity can be established in accordance with some intuitive and rather subjective guidelines, but the identification of syntactic transitivity requires a careful language-specific syntactic analysis.

It should be obvious that a typologist surveying a large number of languages does not have time to do a careful language-specific syntactic analysis of each one, and so in applying this criterion for identifying ergative languages, he or she will almost always grab for semantic transitivity rather than syntactic transitivity, frequently I think without even being aware that there is such a difference. The consequence is that the resulting identification of a language (or its case marking system, to be more specific), as ergative or accusative has only marginal syntactic significance.

This kind of shoot-from-the-hip semantically based determination of ergativity has, as Jeanne Gibson and I have shown (Gibson and Starosta 1990), had bad consequences in the analysis of Polynesian languages, and it is starting to have bad consequences in the analysis of Formosan ones, for the same reason: these languages typically have more than one pattern for translating English transitive sentences, so both will count as `transitive' for the typologer in the street, and the result will be a determination that the languages are accusative or possibly, in Tang Ting-chi's terms, `focusing languages'. However, when syntactic and morphological considerations are taken into account, and when we look at the semantics more carefully in the terms used by Hopper and Thompson, it turns out that only one of the patterns is syntactically (`canonically') transitive and that the other is not. When only the canonical grammatically transitive sentences are used in the determination of ergativity, the result comes up quite clearly ergative for the languages I have looked at in this way. The other two-argument pattern, although possessing both an `A' and a `P' in the conventional typological usage, is grammatically and semantically intransitive. I will refer to this latter pattern for the remainder of this paper as `pseudotransitive'.

The second fundamental problem with an S, A, and P analysis is disjunctions. In reading older work by Dixon and Comrie and recent work by Croft, it is striking how often cross-linguistic generalizations are stated in terms of `S and P' or `S and A'. Grammarians refer to this kind of term showing up in a rule as a disjunction, and it is a fairly reliable sign that there is a problem with the analysis, and that a generalization is probably being missed. One of the advantages of the alternative case-marking system I will present below is that it can describe many of the same phenomena more generally, that is, without the need for disjunctions.

What's wrong with the category `subject' in typological work? There seems to be agreement that something is wrong with it, because several prominent linguists working within this tradition have suggested that maybe we should dispense with it altogether. As Schachter found out when looking at the category of subject in Taglog (Schachter 1976), `subject properties' seem to split up into two groups, which are treated quite differently in Tagalog syntax. The conclusion he should have drawn from this, though as I recall he didn't, is that it was a mistake to set up a group of `subject properties' on the basis of English grammatical subjects in the first place. That is, the problem is not that Tagalog splits apart a unity, but rather that English, as an accusative language, links together two distinct primitive categories, Nominative and actor, and that ergative languages such as Tagalog keep them apart. I will try to show below, based on data from Formosan languages, that keeping these two categories apart in grammatical theory makes it possible to capture some nice language-specific and cross-linguistic generalizations

There's something else wrong with the conventional ergative-absolutive analysis, in addition to using semantic rather than grammatical transitivity in defining it. That is the use of the term

`Absolutive' as the name of the case that marks the S and P (continuing for the time being to use these functional labels). When we compare the Absolutive category across languages, we find some typical properties that generalize very gratifyingly: Absolutive Ns are typically morphologically simpler than non-Absolutive Ns; Absolutive NPs are typically the least omissible in context, and if there is only one NP that agrees with the predicate, it is the Absolutive one. It is very nice to see these patterns emerging over and over when analyzing a new ergative language, but a bit disquieting if we look over our shoulders and notice that the guys over in the accusative workshop have found a set of NPs that have exactly the same properties, but that they are calling them `Nominative' or `(grammatical) subject'.

So if these two categories have the same properties across languages, why should we give them a different name? The answer is twofold: (1) tradition, and (2) S, A, and P. European linguists who encountered ergative languages for the first time didn't want to call the unmarked NPs `Nominative', in spite of all their similarities, because they marked the `direct object' of a transitive sentence rather than the `subject'. In more modern typological terms, if one case form marks S+A, as it does in accusative languages, and if we have already decided that S+A is a `subject', then we may come to think of `Nominative' as the case form that marks the `subject'. If a case form in another language doesn't mark a `semantic/deep subject' (S+A), however, how can we call it the subject case, even if we lose significant cross-linguistic generalizations by not granting it the same name?

For a linguist, generalizations should be sacred, and technical terms are hypotheses about natural categories that shoud be maintained only as long as they don't get in the way of capturing generalizations. The assumption that Nominative marks S+A is the one that is causing the problem, and must be dropped if we want to solve the problem. Nominative and Absolutive should have the same name (I will call them both `Nominative'), and should be defined as whatever case form marks S and either P or A. We can then also redefine `subject' in a useful way as the combination of Nominative and either S, P, or A.

One of the places where we could use a good definition of `subject' is in the statement of the Keenadn and Comrie NP accessibility hierarchy:

> `The general pattern that [Keenan and Comrie] discovered for a large class of relative-clause types can be described as follows:
>
> NP Accessibility Hierarchy
>
> subject<direct object<indirect object<oblique' (Croft 1990:108-109)
>
> `Compare the claim in Keenan and Comrie 1977 that reative clause formation, and possibly many other syntactic processes, apply most readily to subjects, transitive or intransitive.' (Comrie 1978:391)

So what's wrong with that? Before I tell you, I should say that I have the greatest admiration for the NP accessibility hierarchy. It makes some real and concrete broad-ranging generalizations about a lot of languages. What it doesn't do, I have found over the years, is give the right answers for ergative Austronesian languages like those of Polynesia, the Philippines, and Taiwan. If we regard these languages as accusative, or use Tang's `focusing' characterization, then the NP accessibility hierarchy describes relative clauses in these languages perfectly. Thus for example Elizabeth Zeitoun (Zeitoun 1992b:33) rejects an ergative analysis for Tsou in favor of Tang's `focusing' analysis for Austronesian languages, and one advantage of this decision is that the NP accessibility hierarchy would then fit Tsou relative clauses quite nicely. That is, by her analysis (Zeitoun 1992b:3), Tsou does have nominative case, and she refers to the nominative-marked NP as the `subject', in accordance with Tang's `focusing' analysis. An examination of other data shows that it would thus fit the NP accessibility hierarchy for relative clauses. However, what if she were to look over at Arlene Ho's MA thesis on Yami (Ho 1990), Lillian Huang's recent work on Atayal (Huang MS (1993)), or at the somewhat earlier work on ergativity on Philippine languages in the GB, RG, and lexicase frameworks, and decide that Tsou is ergative after all? What then would happen to the generalizations she could have made about Tsou relative clauses? Does Tsou suddenly become a counterexample to the NP accessibility hierarchy instead of one of its empirical supports?

The problem is that while Austronesian ergative languages typically (exclusively?) relativize only on one argument, the `Absolutive', the Absolutive is not the `subject' in Keenan and Comrie's anglocentric view, and therefore has no place in the hierarchy at all.

> `The NP accessibility hierarchy is subject to numerous qualifications and has some exceptions.... We will simply note here that, *not surprisingly* [italics mine], accessibility to relativization is based on the ergative/absolutive distinction in some languages, and in those languages the absolutive role is the least-marked role (i.e. the only one accessible to relativization).' (Croft 1990:110)

As a consequence, ergative languages require a set of separate but equal generalizations about relative clauses etc. For example, in addition to a statement that passive must apply in an accusative language in order to move an argument into the subject position in order to make it eligible for some process to apply, there will be parallel statements for ergative languages of the following type:

> `In order to make the A argument accessible to relative-clause formation, the verb must be antipassivized, thus placing the A argument in the absolutive case (and structurally marking the construction).' (Croft 1990:111)

If we try to improve this state of affairs, though, by recognizing that the Absolutive is the same thing as the Nominative, and replace the anglocentric term `subject' by `(case-role-bearing) Nominative actant', then the most essential term of the NP accessibility hierarchy (Nominative<non-Nominative) fits ergative languages just as well as it fits accusative ones. They aren't exceptional any more, and Tsou relative clauses are well-behaved once more.

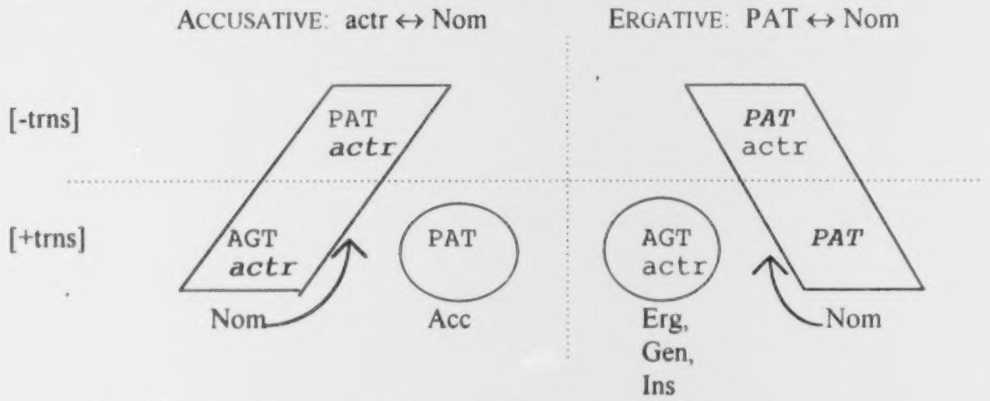
4. The ergative analysis

I have just outlined the reasons for replacing a functionally based typological framework by a grammatically founded one. However, I realize full well that this is not going to satisfy linguists accustomed to dealing with lots of real data from lots of languages. Thus what I propose to do for the remainder of this paper is to present a case-marking system which is based on the analysis of parts of 76 different languages from thirteen language families or areas within a single formal, explicit, and constrained grammatical framework, lexicase dependency grammar. I will then attempt to show how each of the essential primitives of the system is empirically supported by showing how it makes possible the capture of morphological, syntactic, and semantic generalizations about Formosan languages.

5. Case marking and ergativity

`Lexicase' is a generative (formal and explicit) and constrained version of dependency grammar. The diagram below presents the lexicase counterpart of the conventional ergativity-versus-accusativity diagram given as Figure 1):

Figure 2): Accusative versus ergative case marking (lexicase)



In this diagram, [±TRNS] represents the distinction be tween grammatically (not semantically) transitive versus grammatically intransitive verbs. Every verb in every language is marked positively or negatively for this feature. PAT (patient) and AGT (agent) are grammatical case relations, not subjectively identified situational roles. Every verb takes a PAT as a dependent, and every transitive verb takes an AGT. (There are only three other case relations, LOC (locus), COR (correspondent), and MNS (means).) ACTR (actor) is a `macrorole' (a term taken from Role and Reference grammar) which matches the AGT of a transitive verb and the PAT of an intransitive verb. (Fom now on, I will always take `transitive' to mean `grammatically transitive' unless otherwise indicated.) NOM is the nominative case form. It refers to any morphological and/or syntactic configuration which is common to both the single argument of a simple intransitive verb and either the PAT or AGT of a grammatically transitive verb.

As mentioned earlier, Nom is prototypically the the least marked case form in terms of morphology; the Nom actant is the least dispensable nominal constituent in a sentence, and if there is agreement between a predicate and any argument, there is agreement at least between the predicate and the Nom actant. Acc (accusative), Erg (ergative), Gen (genitive), and Ins (instrumental) are also case forms. Given these basic categories, it is easy to state a definition of ergativity as opposed to accusativity: an ergative case-marking system is one in which Nom marks PAT, and an accusative case-marking system is one in which Nom marks actr. (Note that I am not excluding the possibly that both systems may coexist in a single language, as they do of course in Dyirbal for example.) Nom can mark only PAT or AGT, so that there is no such thing in this system as e.g. Tang's `goal subject' (Zeitoun 1992b:7). In an accusative pattern, PAT is always marked by Acc, but in an ergative pattern, AGT may be marked by the Gen case form, as in Formosan and Philippine languages, Ins as in Tibetan, or by a special Erg case form, as in Dyirbal and Hindi.

Case relations in a lexicase grammar are perceptual rather than situational. A language may encode the participant in a given situation in more than one way, and assign it different case relations accordingly. Deciding which grammatical case relation an NP bears is thus a grammatical matter, and cannot be settled by looking out the window and seeing who starts off with the baseball and who ends up with it, since a given language may allow such a situation to be encoded in more than one way. Assigning a given case relation to a given NP is not an a priori situationally based choice but an empirical hypothesis, testable on the basis of which assignment results in the best set of language-internal and cross-linguistic generalizations.

Once case relations have been assigned in accordance with grammatical criteria, they do turn out to have some minimal fairly constant situational correlates. Thus PAT encodes the perceptually central participant (corresponding to some extent to the S+P disjunction in functionally based approaches to syntactic typology), AGT encodes the external role which is perceived as impinging most directly on the PAT (often matching the functionally determined `A'), and actr encodes the participant viewed as the instigator or controller of the action or state encoded by the predicate (matching the S+A disjunction fairly well). Case relations are mutually exclusive, but actr coexists with either AGT or PAT. Note that AGT and actr are not the same thing; each can be separately justified by the generalizations it underlies.

6. Exemplification

The categories I have just described are not handed down by a deity. As in any other empirical science, they are hypotheses about the nature of human language, and are justified to the extent that they produce a more compact description of the nature of language (Occams's Razor) and make the correct predictions about possible grammatical configurations in human languages. Accordingly, in the remainder of this paper, I will discuss each of the basic components of the lexicase case marking system in turn, and show how its existence is justified by the language-specific and cross-linguistics generalizations it makes possible and the insights that result in an analysis of date from Formosan languages. I will occasionally compare the results with the analyses that would result from applying conventional functionally defined categories (S, A, and P; anglocentric `subject', semantic transitivity, the Absolutive case form) to the same data.

6.1 Primitives

6.1.1 PAT

The kinds of generalizations that can be stated in terms of PAT alone include verbal semantics, the scope of complement case relations and infinitival complements, noun incorporation, resultative constructions, verbal derivation, and patterns of discourse cohesion, especially coordination. Only the first three of these will be discussed in this paper.

6.1.1.1 The semantics of different verb classes

English examples such as *John loaded the hay on the truck* and *John loaded the truck with hay* and their counterparts in other languages have long been a popular topic in the case grammar literature. The lexicase analysis of such examples claims that distinct though homophonous verbs are involved, *load*$_1$ and *load*$_2$. *Load*$_1$ is a transportation verb, like *throw*, in which a PAT is viewd as being moved to a LOC, while *load*$_2$ is an affect verb, like *cover*, in which a PAT is interpreted as being affected by the action of the verb:

1)

John	$\left\{\begin{matrix}\text{threw,}\\ \text{loaded}_1\end{matrix}\right\}$	the	hay	on	the	truck
	+trns +lctn		PAT			LOC

2)

John	$\left\{\begin{matrix}\text{covered,}\\ \text{loaded}_2\end{matrix}\right\}$	the	truck	with	hay
	+trns +lfct		PAT		MNS

In 1), *load*$_1$ or *throw* interprets its PAT as moving to LOC, and when the action is completed, all the hay is on the truck. In 2), on the other hand, *load*$_2$ or *cover* interprets its PAT as being locationally affected, and when the action is completed, the truck is perceived as having been affected: the space it encodes is filled or covered. Thus the verbal semantics interpret the PAT in a particular way, and the PAT may be encoded differently in different perceptions of the same objective situation.

The situation illustrated in 1) and 2) does not always involve homophony. Thus in German, verbs of type 2) may be prefixed by *be-*, and in Philippine-type languages, there are a number of affixation patterns for effecting this kind of reinterpretation. Linguists who are speakers of accusative languages have long regarded this as a very special and unique kind of phenomenon, even assigning it a whole new case-marking typology, as Tang Ting-chi does (Zeitoun 1993b:33), different from both accusative and ergative patterns. However, evidence has been piling up in recent years to the effect that Philippine languages are ergative.[1] Once that has been accepted and the analysis has been recast in a lexicase representation, Philippine-type `focus' turns out to be nothing more than *load-hay* verbal derivation in an ergative mantle. The following examples from Zeitoun's MA thesis on Tsou will serve to illustrate the difference. I give the example first using Zeitoun's syntactic categories (but filling in information she left out, guessing as necessary, and leaving out non-relevant parts), and then in the lexicase ergative representation:

3) [Zeitoun 1992b:12, (28)a]

mo	mofi	to emi	to amo	?o ino
FM	AF	Obl	Obl	Nm
		Theme	Dative?	Agent

`Mother gave some wine to father.'

4) [Zeitoun 1992b:12, (28)b]

i	-si	fii	to emi	to ino	?o amo
FM	-CP	DF?	Obl	Obl	Nm
			Theme	Agent	Dative?

`Father was given some wine by mother'

---

[1] The first linguist to make this claim, though only for one class of Tagalog verbs, was Videa DeGuzman, in her lexicase Ph.D. dissertation (DeGuzman 1978), and was extended to the whole language by Stanley Starosta (Starosta 1986). The same discovery was made in a relational grammar framework by Donna Gerdts (Gerdts 1983) and in a GB mode by Gary Byma (Byma 1986).

5) [Zeitoun 1992b:12, (28)b]

i	-si	faeni	to amo	to ino	?o emi
FM	-CP	TF?	Obl	Obl	Nm
			Dative?	Agent	Theme

'The wine was given to father by mother'

Zeitoun's discussion of this approach shows Tang's 'focusing' analysis to be a variant of the kind of analysis being done for Phillippine languages up until the mid-70's. One innovation she has made however, and one which does not seem to have any place in Tang's system, is to introduce a cover symbol NAF for all the verbal foci other than AF 'actor focus' (Zeitoun 1992b:4). As she describes Tang's analysis, it makes no provision for this kind of binary distinction. In fact, this is a category she has lifted verbatim (without citation, in good GB style), from Shigeru Tsuchida's Ph.D. dissertation on Tsouic (Tsuchida1976:43), and there is an extremely good rationale for it: AF forms are grammatically intransitive, and NAF clauses are grammatically transitive. Conventional Philippinist focus analyses used to refer to non-AF forms as 'passives', and Zeitoun uses this term in describing the AF-NAF dichotomy in her 1992a paper, an earlier version of her MA thesis (Zeitoun 1992a:10), but it is not there in the final version (Zeitoun 1992b:15). The earlier characterization in terms of active and passive suggests that the NAF forms might be intransitive, but in a lexicase analysis, it is the other way around, and exactly this distinction is the central pillar of the ergative analysis she rejects. Partial lexicase analyses for her examples, with different suggested glosses, illustrate this point:[2]

3')

mo	mofi	to	emi	to	amo	?o	ino
	-trns		Gen		Gen		Nom
			MNS		LOC		PAT
	+lctn				actr		

trns = transitive

'Mother gave some wine to father.'

4')

i	si	fii	to	emi	to	ino	?o	amo
	Gen	+trns		Gen		Gen		Nom
	AGT			MNS		AGT		PAT
	actr	+lfct				actr		

lfct = local effect

'Mother gave father some wine.'

5')

i	si	faeni	to	amo	to	ino	?o	emi
	Gen	+trns		Gen		Gen		Nom
	AGT			LOC		AGT		PAT
	actr	+lctn				actr		

lctn = location

' Mother gave the wine to father.'

There are several points to note here. The first is that emi 'wine' is translated as definite in 5'), but as indefinite in 3') and 4'). Reason: the wine is the PAT, the central participant, in 5') but not in 3') and 4'), and PAT in Philippine and Formosan languages is almost always interpreted as definite, while the notional 'object' when encoded as MNS rather than PAT seems always to be interpreted as indefinite. Second, as with *the hay* in 1) above, emi `wine' in 5') is the thing that is interpreted as moving to the LOC, amo `father' under the impetus of ino `mother'. Similarly, as with *the truck* in 2), amo `father' is interpreted in 4') as being locationally affected by the action.

---

[2] For the remainder of the paper, all analyses assigned to examples from Formosan languages are mine unless otherwise indicates.

In 3'), finally, ino `mother', the performer of the action (actr), is interpreted as the center of the action, with both father and the wine downgraded to the status of accessories to the action. In traditional Philippinist terms, it is the action that is important here, not the entities directly or indirectly affected by it. In Hopper and Thompson's terms, the example is semantically intransitive, and this is reflected in the lexicase analysis as a syntactically intransitive sentence. Unfortunately, I can't think of an English example of a three-argument intransitive sentence, but they exist in other languages, e.g. French:

6) [Laurent Sagart, p.c.]

Elle	peignait	des	fleurs	sur	les	murs.
Nom	-trns		Abl			Lcv
PAT	+lctn		MNS			LOC
actr						

`She painted flowers on the walls.'

6.1.1.2 Scope of complement and ajunct case dependents

A non-subject complement case relation has a PAT in its scope. Thus the LOC complements in the following Rukai sentence (twalay tarumak, ʔakila ɭigɭig) refer specifically to the positions of the PAT (kayvay tudaŋ) rather than the domain within which the whole action took place:

7) [Li 1973:123, (14)][3]

kiaaniʔalay	sa	sasivira	twalay	tarumak	ʔakila	ɭigɭig	kayvay	tudaŋ
was-blown		wind	from		to	mountain	this	tin-roof
+trns		Gen	+sorc	Lcv	+goal	Lcv		Nom
+lctn		AGT		LOC		LOC		PAT
		actr						

`This tin-roof was-blown from Tarumak to the mountain.'

In fact exactly the same pattern applies in intransitive clauses, though it is a bit harder to see because PAT and actr are marked on the same participant:

8) [Li 1973:122, (8)]

aniaʔalay	twalay	ubula	ʔakila	tarumak	kay	aðaðam
flew	from	hill	to		this	bird
-trns	+sorc	Lcv	+goal	Lcv		Nom
+lctn		LOC		LOC		PAT
						actr

sorc = source

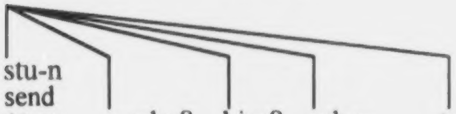
`This bird flew from the hill to Tarumak'

---

[3] I am tentatively using an ergative analysis here rather than following Li's original accusative analysis. This question is currently under active reconsideration. A desirable feature of the lexicase approach is that the question of the scope of complement case relations is independent of this determination, and generalizes across both linguistic classifications.

The same patern is found with other complement case relations, which again bear directly on the PAT, while other verbal dependents refer to the action or state encoded in the predicate. Thus in the following Atayal example, biru? `the materials' relate specifically to Tali--he is the one who ends up with them--while the adverb suhan describes the action of sending as a whole:

9) [Huang 1993:70, (45)a]



stu-n				
send				
+trns	-maku?	biru?	suhan	tali
+lctn	-1S.G	book	tomorrow	Tali
	Gen	Gen	Adv	Nom
	AGT	MNS		PAT
	actr			

`I will send Tali the materials tomorrow'

In a Chomskyan grammar, this might be accounted for (if at all) in terms of a hierarchical structure in which complements are closer to the verb than adjuncts, but that won't in general work, since an adjunct may be closer to the predicate in linear order than a complement, as in the example just given.

We can also regard the PAT as the `scope' of an infinitival complement construction, in that the missing subject of the infinitival clause (Nom-actr in a lexicase analysis) is interpreted as identical to the PAT of its matrix verb, regardless of whether the matrix verb is transitive or intransitive. Two examples from Atayal will illustrate this point:

10) [Huang 1993:89, (3)b][4]

m-usa?	-ku?	m-aziy	Δ	qaya	mŋka?
go	I	buy		thing	Taipei
-trns	Nom	-trns	Nom	Gen	Lcv
+fint	PAT	-fint	PAT	COR	LOC
	actr		actr		

`I am going to Taipei to buy things'

11) [Huang 1993:89, (14)a]

qrq-an	-ku?	-nya?	m-ihiy	Δ	isu?
stop	I	by_him	beat		2S.L]
+trns	Nom	Gen	-trns	Nom	Gen
+xtns	PAT	AGT	-fint	PAT	COR
		actr		actr	

`He stopped me from beating you'

It might appear that the appropriate generalization is that the missing lower-clause subject is controlled by the upper-clause Nominative constituent, but a comparison with an accusative language like English, where the upper clause PAT is in the accusative, shows the the appropriate generalization is upper PAT - lower actr:[5]

---

[4] In this paper, I will indicate the presence of missing constituents by the use of delta's (Δ). I do this as a convenience to readers who have no particular interest in formal syntax. In a fully specified lexicase representation, there are no empty categories whatsoever: no trace, no PRO, and no unfilled nodes.

12)

He	stopped	me	from	Δ	beating	you
Nom	+trns	Acc		Nom	+trns	Acc
AGT		PAT		AGT	-fint	PAT
actr				actr		

6.1.2 Transitivity

It was the great service of Paul Hopper and Sandra Thompson (Hopper and Thompson 1980) that they sensitized us to the distinction between semantic and syntactic transitivity, and made it possible to use each to support an analysis of the other. In my own experience, it was this paper which helped me to recognize the difference between true transitive constructions and pseudotransitives in Polynesian, Philippine, and Formosan languages, and the paper seems to have done the same service for Lillian Huang in her paper on Atayal transitivity (Huang MS (1993)). It is the great disservice of functional typologists to continue to use the situational categories A and P as if they were rigorous syntactic constructs, thereby obscuring this distinction.

The typical situation in Formosan and Phipippine languages with respect to transitivity is the following: there are two classes of two-argument sentences, both involving `A' and `O' in some pretheoretical sense, but differing from each other systematically in morphology, syntax, and semantics, exactly as Hopper and Thompson have led us to expect. I will refer to them here as `transitive' and `pseudotransitive'.[6] Some of their differences can be summarized as follows:

6.1.2.1 Morphology:

Intransitive verbs in Formosan and Philippine languages, including both single-argument intransitives and pseudotransitives, commonly take a prefix of the form *m*(V)- or an infix of the form -(V)*m*-, while transitive verbs are commonly suffixed by -(V)*n*, *-i*, or *-a*, or, less commonly, prefixed by *s*(V)-. Either of the terms can be absent, so that in Tsou there are intransitive *m*-forms contrasting with unmarked transitive forms (cf. Zeitoun 1992b:15-17). As mentioned earler, Zeitoun labels the two sets `AF' and `NAF', and finally, on p. 49, refers to Hopper and Thompson's article and seems almost to equate AF with intransitivity and NAF with transitivity. As far as I could tell, though, she views this purely as a semantic matter and does not draw the syntactic consequences nor notice the inconsistency between an analysis stated in terms of a binary transitivity distinction and Tang's multipolar `focusing' analysis.

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[5] I am glossing over several complications here, both at the metatheoretical level and in the analysis of Atayal complex constructions; see Huang 1993, Chapter 4.

[6] I have sometimes referred to pseudotransitives in earlier work as `antipassives', but as Lisa Zeitoun has pointed out (Zeitoun 1992b:32), the term `antipassive' is normally used to mark a morphologically marked member of a derivationally related transtive:intransitive pair of two-argument verbs. In Polynesian, though, and frequently in Tsou, it is the intransitive member of the pair which is unmarked, and the transitive member which bears the affix. (Her comment was stated in terms of transformations and inflection rather than in terms of lexical derivation, but the point about markedness is still a valid one.)

6.1.2.2 Syntax

If a language has clitic pronouns, a genitive set will occur with transitive verbs and a nominative set with intransitive verbs. The third person Nominative is commonly zero. There are two variants of this pattern: (1) Tsou and Yami allow only one clitic per clause, so genitive pronouns occur with transitives and nominatives occur with intransitives. Unfortunately, the two sets are almost identical in form in Tsou, and it is only the third person forms (*si* or *he* for Genitive, zero for nominative) which make a clear distinction. (2) Atayal has both sets, and they may cooccur in a transitive clause. Surprisingly, Huang does not seem to have noticed this pattern in her paper on Atayal ergativity.

6.1.2.3 Semantics

The Formosan transitive-pseudotransitive contrast is a beautiful example of what Hopper and Thompson were talking about. When there is a contrast between two related verbs along this axis, the syntactically transitive member of the pair is also semantically transitive, and vice versa. Huang (Huang MS (1993)) has given a very nice and complete set of examples of this contrast for Atayal, but in case the reader is tired of this harsh northern languages, here is a pair from the gentle southern climes of Orchid Island, ancient home of the Yami people and more recently of a nuclear waste disposal site:

14) Pseudotransitive [Ho 1990:3.1-17b]

ya	Δ	kuman	si	mapapu	su	suli
		eat		Mapapu		taro
	Nom	-trns		Nom		Gen
	PAT			PAT		MNS
	actr			actr		

`Mapapu is eating taroes.'

Note the absence of a third person nominative clitic pronoun.

15) Transitive [Ho 1990:3.1-17a]

ya	na	ni-kan	ni	mapapu	u	suli
	by her	eaten		Mapapu		taro
	Gen	+trns		Gen		Nom
	AGT			AGT		PAT
	actr			actr		

`Mapapu has eaten up the taroes.'

This pair illustrates a typical manifestation of semantic transitivity: 14) represents an in-progress action with a partial affect on the `O', while 1515) illustrates a completed action with a total affect. Morphologically, the verb in 14) has an *-um-* infix, while the verb in 15) doesn't (*ni*-marks aspect, not focus), and syntactically, 14) has a zero nominative clitic pronoun, while 15) has the genitive clitic *na*. For more examples, see Ho 1990 and/or Huang MS (1993).

The following Tsou examples illustrate the same contrast:

16) [Zeitoun MS (1993), (9)a]

m̲o	Δ	m̲imo	ta	chimi	?e	ino
-trns	Nom	-trns		Gen		Nom
	PAT			MNS		PAT
	actr					actr

`Mother is drinking w̲a̲t̲e̲r̲.'

17) [Zeitoun MS (1993), (9)b]

i	si	ima̲	ta	ino	si	chimi
-trns	Nom	-trns		Gen		Nom
	PAT			MNS		PAT
	actr					actr

`He has drunk water.'

18) [Zeitoun 1992b:31, (82); `A(gent) F(ocus) Construction']

m̲o	Δ	eobako	ta	oko	?e	ino
-trns	Nom	-trns		Gen		Nom
	PAT			MNS		PAT
	actr					actr

`Mother is beating the child'

19) [Zeitoun 1992b:31, (83); `N(on) A(gent) F(ocus) Construction']

i	ta	eobaka̲	ta	ino	?e	oko
+trns	Gen	+trns		Gen		Nom
	AGT			AGT		PAT
	actr					actr

`The child has been beaten by mother.'

20) [Zeitoun 1992b:31, (84)a]

m̲o	Δ	m̲oŋsi	?e	oko
-trns	Nom	-trns		Nom
	PAT			PAT
	actr			actr

`The child is crying'

The non-auxiliary verbs in 16) and 17) and in 18) and 19) differ in the presence or absence of an *-a* suffix, reconstructed as a transitive suffix all the way back to PAN by Starosta, Pawley, and Reid (Starosta, Pawley, and Reid 1982), and in 16) and 20), the non-auxiliary also begins with the expected intransitive prefix *m-*. Morphologically, the *m-* auxiliary verbs in 16), 18), and 20) too are intransitive, and must be followed by intransitive verbs and zero third person pronouns, while the transitive non-*m* auxiliary verbs in 17) and 19) must be followed by a genitive pronoun and the transitive-suffixed ima̲ and eobaka̲. Based on my own research on Tsou, I find *water* in 17) and *the child* in 18) quite suspicious; I would have expected *t̲h̲e̲ water* and *a̲ child*. However, the aspectual distinctions are as they should be: progressive for the pseudotransitives 16) and 18) and simple intransitive 20), and completed for the grammatically transitive examples 17) and 19).

So how does Zeitoun, working within Tang's `focusing language' analysis, view sets of examples such as these? First of all, the auxiliary verbs she refers to as `focus markers', a purely arbitrary category whose properties don't follow from any general principles and thus must be stipulated.

> 'Aside from these two types of transitive sentences[18) and 19)], we also find intransitive sentences...' (Zeitoun 1992b:31)

Thus she regards both 18) and 19) as transitive. This shows that she has missed the distinction between grammatically transitive clauses and pseudotransitive clauses, which is the key to the whole case-marking system. On page 11, she refers to this distinction in clause patterns as an 'orientation (active or passive)' (Zeitoun 1992b:11-12), something that Tung T'ung-ho warned rightly against in 1964.

Unfortunately, this whole system of grammatical transitivity in Formosan languages is easy to miss if we follow the anglocentric functional guidelines of conventional syntactic typology and look at clauses in terms of S, A, and P. Comrie states the procedure as follows:

> 'A refers to that argument of a transitive verb which would be its subject in a non-ergative language like English....' (Comrie 1978:330)

> 'In the transitive construction, we start from a set of canonical (prototypical) transitive constructions, referring to actions where an agent acts upon a patient, and use A for the agent in such a construction and P for the patient.' (Comrie 1984:92)

Unfortunately, prototypical' here refers to situational rather than grammatical prototypes. Semantics in, semantics out, syntactic insight nil.

> 'The A/P terminology can be extended, however, to other transitive constructions with the same syntactic behavior, but where the participants are not, strictly, semantic agent and patient.' (ibid.)

All very fine, but by then the damage has already been done.

6.1.3 Nom

6.1.3.1 Nominative vs. Absolutive

As noted earlier, NPs labeled by the terms Nominative and Absolutive share a large number of grammatical properties across languages, including almost everything except the case relation they mark in a transitive clause, and an adequate universal linguistic theory will need a means of accounting for this. In lexicase it is done by labeling all such NPs 'Nominative'. However, in a conventional ergative analysis which uses the term 'Absolutive' for the case form which marks S+P, the similarity between Nominative and Absolutive is an unexplained coincidence:

> 'In nominative-accusative morphology, it is typical (though not quite universal) for the nominative to be less complex morphologically...than the accusative and oblique..., whereas in ergative-absolute morphology it is typical for the absolute to be less compelx morphologically...and the ergative and oblique more complex....' (Comrie 1978:368-369)

In the lexicase analysis, on the other hand, which does not set up a separate 'Absolutive' case for ergative languages, the similarity is explained because there is no difference between the two categories.

6.1.3.2 Minimal morphological marking

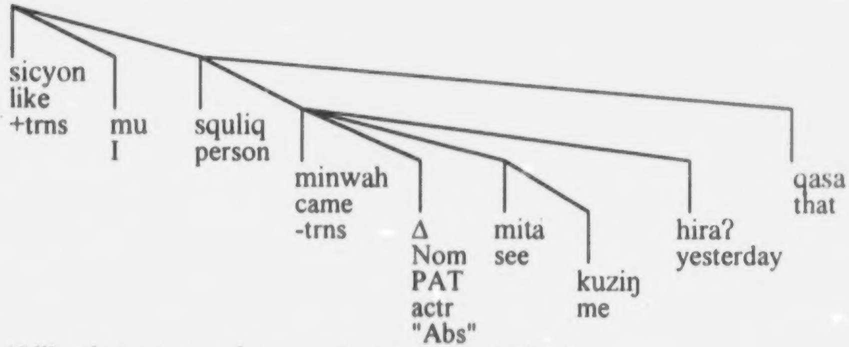
A number of Formosan languages (including Kanakanabu, Saaroa, Tsou, Atayal, and Rukai, and also Yami, geographically but not genetically Fomosan) have a gap in the paradigm of bound pronouns. The missing form is by the lexicase analysis the third person Nominative, which is in accord with the universal tendency for Nominative to be the least marked case form. In a conventional ergative analysis, of course, this form would be 'Absolutive', and would require a separate generalization. This phenomenon is noted by Zeitoun (Zeitoun 1992b:62), but only as an arbitrary restriction:

> 'We may therefore observe a gap in the pronominal paradigm: in AF constructions [in 1992a:43 it was 'in transitive antipassive sentences'], the enunciator can't refer to an invisible actor by means of a specific pronoun.'

6.1.3.3 Relative clauses

As mentioned earlier, regarding the 'Absolutive' case form as Nominative eliminates one systematic exception (Croft 1990:110) to the Keenan and Comrie 'NP accessibility hierarchy' for relative clauses. If Formosan and Philippine languages are ergative, and if a 'subject' is just a case relation-bearing Nominative constituent, then these languages are in general consistent with the basic part of the hierarchy: subject<non-subject. The following examples given to me by Lillian Huang (Huang, p.c.) illustrate this point:

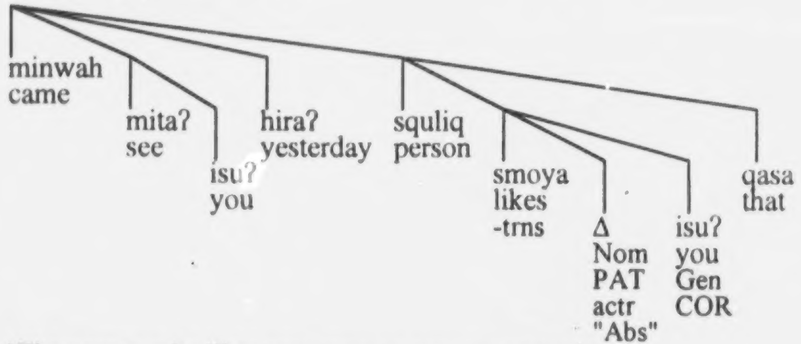
21) [Huang, p.c., 1]


sicyon
like
+trns
mu
I
squliq
person
minwah
came
-trns
Δ
Nom
PAT
actr
"Abs"
mita
see
kuziŋ
me
hiraʔ
yesterday
qasa
that

'I like that person who came to see me yesterday.'

squliq is the regent of an intransitive relative clause. The missing argument corresponding to squliq would be a Nominative, so this example is consistent with the NP accessibility hierarchy, whereas if the missing argument were labeled 'Absolutive', it would be an exception.

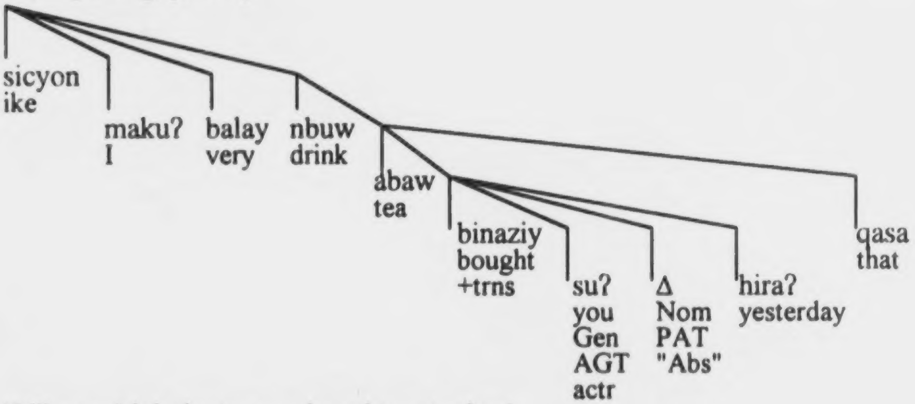
22) [Huang 1993:101, (32)]


minwah
came
mitaʔ
see
isuʔ
you
hiraʔ
yesterday
squliq
person
smoya
likes
-trns
Δ
Nom
PAT
actr
"Abs"
isuʔ
you
Gen
COR
qasa
that

'The person who likes you came to see you yesterday.'

22) is an example of a kind of reversal of 21), with minwah `came' on top and sicyon `like' in the relative clause. Here sicyon [+trns] has been repalced by smoya [-trns] in order to allow the relativized NP to occupy the Nominative slot:

23) [Huang, p.c., 9]



`I like to drink the tea you bought yesterday.'

In this example, the embedded sentence is a transitive clause. The missing argument again is the Nominative by the ergative analysis, and is thus consistent with the NP accessibility hierarchy. It would also be compatible, at least in this respect, with a passive analysis such as Zeitoun implies, but again not with an ergative/absolutive representation.

6.1.3.4 Word order

Word order is another area in which the Nominative case form is of value. If we use an anglocentric or `semantic' characterization of `subjects' and other arguments, as Greenberg and his successors have done and as for example Huang does for Formosan languages (Huang 1993:11-12), important generalizations would be lost in a language like Tsou (Zeitoun MS (1993):6, fn. 10). That is, if we define subject to mean `grammatical subject', then we can identify Tsou as a subject final language (Zeitoun 1992b:3-4). As Zeitoun puts it,

> `Following Greenberg's (1963) language typology, Tsou can, therefore, be defined as a V-O-S language.'

Ah, would that that were so! Even if we amend Zeitoun's statement to `V-X-S language' to allow for non-object arguments, she is still giving Greenberg too much credit to say that he was doing the same thing. He did not do, and could not possibly have done, a full grammatical analysis of every language he included in his surveys. Instead, `subject' for him was not the grammatical subject, as Zeitoun is quite properly using the term, but just whatever translated the English subject, that is, S+A.

6.1.4 actr

The category actr by itself is a very useful one in that it makes possible the statement of universal generalizations about two constructions in a way which applies equally well to ergative and accusative languages:

> **Imperative constructions:**
>
> The participant which is ordered to perform an action in an imperative construction is an Actor, and the actant which may be omissible in imperatives...is the Actor. (Starosta 1988:151).

I provided examples from Tagalog and English here to show that this generalization applies independently of the ergative-accusative distinction. This analysis avoids the awkwardness of Dixon's claim `that all imperative constructions follow an accusative pattern' (Croft 1990:153), even when they have no accusative case form in the syntax at all, and the contortions Comrie goes through (Comrie 1981:111) in coming to grips with the same problem.

> **Reflexive constructions:**
>
> `The element which usually controls reflexivization is the Actor rather than the subject....In English, and in accusative languages in general, Actor and subject (Nominaitve) coincide. However, we can see that the crucial category is Actor rather than Nominative by comparing...examples from an ergative language, Tagalog.... (Starosta 1988:152-153)
>
> In most or all of the cases when Comrie speaks of of `accusative syntax', then, e.g.
>
> `Let us therefore turn to some constructions where there is a pragmatic expectation of cross-linguistic bias in favor of one particular kind of syntax, in fact in favor of accusative syntax.' (Comrie 1984:93-94)

I think it is fairly safe to conclude that there is a generalization waiting to be stated in terms of the category *actr*. The same is true of Dixon's `S/A pivot':

> (i) S/A pivot: the coreferential NP must be in derived S or A function in one (or both) clauses....
>
> `Pivot' is a language-particular category that is entirely syntactic in nature and application.' (Dixon 1979:121-122).

The generalizations that Dixon would make in terms of his language-specific ad hoc pivot can be recast directly in terms of the universal category actr.

7. Conclusion

Since the end of my allotted twenty pages is at hand, I will only list some of the remaining generalizations that are made possible within the Formosan language family and beyond by using combinations of one or more of the lexicase primitives.

Nom and PAT: ergative languages are those in which the PAT is always marked by the Nominative case form. Note in contrast that a description of ergative syntax stated in terms of participant roles instead of syntactically based primitives (Huang MS (1993)) cannot describe the case-marking pattern without a disjunction, a many-to-many relation between participant roles and case forms. A similar comment applies to Zeitoun's earlier analysis:

> `...the nominative case co-occurs with the in-focus NP of a given sentence, i.e. the S(ubject) of an intransitive clause, the A(gent) of an antipassive sentence and the P(atient) of a transitive passive sentence.' (Zeitoun 1993a:52)

AGT and transitivity: The presence of an AGT implies that the verb is transitive and vice versa.

PAT and actr: the missing actr in an infinitival complement is coreferential with the PAT of the regent verb.

actr, Nom, and transitivity: In Formosan and Western Austronesian languages with `pronoun attraction'/`clitic climbing', the coreference relation between the clitic pronoun attached to the auxiliary verb and the overt or covert noun it coreferences in the dependent clause can be stated neatly: actr-to-actr, Nom-to-Nom (Starosta 1986). The reader is invited to try this out with the examples given elsewhere in this paper. This requirement turns out to explain the `agreement' in `active/passive' in Tsou which Zeitoun notes but doesn't try to account for (Zeitoun 1992a:10, 1992b:11-12,19). In fact, by abandoning the `auxiliaries as main verbs' analysis in the later version, she gets even farther away from a real solution.

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A "Minimalist" Approach to a Contrastive Aalysis of English, Chinese and Japanese

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1. Introduction

It has often been complained by language teachers and computational linguists that Government-Binding Theory (or its latest developments as the Principles-and-Parameters Approach and the Minimalist Program) is too abstract in content and too esoteric in form to be of much use for language teaching or machine translation. In this pater, we will propose a "minimalist" approach to contrastive analysis, in which the theta-grid constitutes an essential part of lexical entries, and the computational system which regulates the projection of the content of theta-grids in terms of the X-bar theory and other principles of universal grammar. In this approach, sentences are simply projections of the obligatory arguments registered in the theta-grids of predicates, combined with substitution or adjunction of various optional arguments. The role of Affect α, or the rule system in general, is so drastically reduced as to become almost non-existent, and D-structure and S-structure, which seem to play no significant role in language teaching or machine translation, may be altogether eliminated. The paper consists of six sections. After a brief introductory section, section 2 and 3 present our theoretical assumptions and survey the semantico-syntactic properties of predicates as related to the theta-roles of their associated arguments. Section 4 then discusses how these semantico-syntactic properties can be incorporated in a very simple format of theta-grids, while section 5 investigates the conditions and constraints on the projection of the syntactic information presented in theta-grids. Finally, the concluding section summarizes how contrastive analysis of three genetically unrelated and typologically distinct languages, English, Chinese and Japanese, can be conducted by comparing the contents of the theta-grids between the corresponding predicates in these languages and investigating the manner in which they are projected into surface sentences. The relevance and value of the "minimalist" approach to language typology and machine translation is also briefly touched upon in the final section.

2. Theoretical Assumptions

Before going into a detailed discussion of our grammatical theory and analysis, we will briefly present our theoretical assumptions concerning how a natural language can be analyzed and generated in its simplest terms, how different languages can be compared with, or transferred from, each other in a most straightforward manner, and in what sense our approach can be called "minimalist".

(1) Language, or language faculty underlying it, can be analyzed as consisting mainly of two components: the lexicon and the computational system.

(2) The lexicon can be considered as the sum total of lexical items, which include words, morphemes and idioms occurring in a particular language. A lexical item, in turn, can be analyzed as a complex of phonetic, syntactic and semantic features specified in the lexical entries of these lexical items. One of the main sources of the idiosyncracies of a particular language or particular grammar lies in the lexicon.

(3) The computational system, on the other hand, consists of a very limited number of principles, along with a few parameters, the values of which (e.g.

the plus or minus value, or a choice among several alternative items) are left for individual languages to fix. Since these principles are highly interactive with each other, different selections of the parametric values also lead to considerable differences between languages.

(4) The computational system so conceived can be considered as a theoretical model for universal grammar (UG), whose principles and parameters characterize and constrain the core grammar (CG) of all natural languages. In addition to the core grammar, which constitutes the main body of a particular grammar (PG), individual languages may also contain a limited amount of peripheral grammar to handle their marked phenomena or constructions, resulting in further discrepancies between languages.

(5) Sentences consist of predicates, including verbs, adjectives and nouns, and their accompanying arguments, obligatory or optional. That is, sentences can be simply analyzed as projections of the syntactic properties of predicates. Furthermore, the projections must be constrained or licensed by the principles and parameters of universal grammar. Thus, our main concerns will be: (a) Exactly what syntactic properties of predicates are relevant to the projection into sentences? (b) How can these syntactic properties be most simply and generally registered in the lexical entries of predicates? And (c) in what manner and under what constraints are these syntactic properties of predicates projected into sentences?

(6) Our approach purports to be "minimalist" in that not only do we admit of only the lexicon and the computational system, thereby drastically reducing the role of the rule system in our grammar, but we also derive the surface structure of a sentence without recourse to its deep structure. Moreover, all the syntactic information necessary for the projection into sentences is registered in the simplest way in the form of theta-grids for predicates, which will straightforwardly map onto sentences. This approach will not only simplify contrastive analysis between languages by pointing out the similarities and dissimilarities between the contents of the theta-grids of the corresponding predicates and the ways they project into sentences, but will also facilitate machine translation by rendering parsing rules and transfer rules virtually unnecessary.

3. Syntactic Properties of Predicates

Syntactic properties of predicate verbs, adjectives and nouns which are crucially relevant to projection into sentences include the following:

(1) Argument properties of predicates: that is, how many obligatory arguments do these predicates require to form a complete sentence? Are they "one-term" predicates (e.g. intransitive verbs), "two-term" predicates (e.g. transitive verbs) or "three-term" predicates (e.g. ditransitive verbs and complex transitive verbs)?

(2) Thematic properties of predicates: that is, what kind of semantic roles do these arguments play? Do they play the thematic role of Agent, Experiencer, Theme, Source, Goal, Benefactive, Instrument, Location or Time?

(3) Categorial features of arguments: that is, what syntactic category do these arguments belong to? Are they a noun phrase (NP), an adjective phrase (AP), an adverb phrase (AdP), a prepositional phrase (PP) or a clause (IP or CP)? If it is a clause, then what semantic type (e.g. declarative, interrogative, exclamatory) and syntactic type (e.g. finite, infinitival, participial, gerundive) does it belong to?

(4) Syntactic functions of arguments: that is, what syntactic functions do these arguments perform? Do they serve as subject, object, complement or

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adjunct? And what position do they fill in a sentence?

Therefore, we are concerned with two problems, both in theory and execution: how can we register these syntactic properties in the lexical entries of predicates in as simple and explicit a manner as possible: and how can we project these syntactic properties of predicates into sentences in as economical and straightforward a manner as possible. Our solution to the first problem will be the compilation of theta-grids for predicates, which employ theta-roles as basic units of lexical informaiton.

Our proposed theta-grids consist of theta-roles which indicate semantic roles played by the arguments associated with predicates. It is still a moot question how many theta-roles should be recognized in universal grammar and how each theta-role should be defined and distinguished from others. The selection and determination of theta-roles must satisfy the criteria of universality, optimality and objectivity. We will not, however, go into a detailed technical discussion of how to set up a universal set of theta-roles, but rather, will heuristically present theta-roles which we think are useful in our discussion of contrastive analysis and machine translation, along with their semantic import, canonical structure realzation, collocation with adpositions (including prepositions and postpositions) and distribution in a sentence.

(i) Agent (Ag): the voluntary and self-controllable instigator of the action identified by an actional verb, typically an animate or human NP: always occurring as subject of an active sentence or introduced by agentive adpositions 'by: 被, 讓, 給: に' in a passive sentence, for example:

(1) a. [$_{Ag}$ John] smashed the vase with a hammer.
b. [$_{Ag}$ 小明] 用鐵槌敲碎了花瓶。
c. [$_{Ag}$ 太郎が] 金槌で花瓶を割ってしまった。
(2) a. The vase was smashed [$_{Ag}$ by John] with a hammer.
b. 花瓶 [$_{Ag}$ 被小明] 用鐵槌敲碎了。
c. 花瓶 [$_{Ag}$ 太郎に] 金槌で割られてしまった。

(ii) Experiencer (Ex): the non-voluntary or non-self-controllable participant of perception or cognition identified by a stative verb, or one that is affected by a genuine psychological event or mental state, typically an animate or human NP, and capable of occurring as subject of an active sentence (as in (3) and (5)), the object of agentive adpositions 'by: 被, 讓, 給: に' in a passive sentence (as in (4)) or the object of psychological causative verbs (as in (6) and (7)):

(3) a. [$_{Ex}$ John] ({unitentionally/ *intentionally}) heard Mary's words.
b. [$_{Ex}$ 小明] ({無意地/ *有意地}) 聽到了小華的話。
c. [$_{Ex}$ 太郎に] 花子の話聲が ({偶然/ *わざと}) 聞こえた。[1]

---

[1] Unlike English ('look at' v. 'see', 'listen to' v. 'hear') and Chinese ('看' v. '看(見/到)', '聽' v. '聽(見/到)'), which have a pair of actional versus stative verbs, Japanese ('見る' v. '見える', '聞く' v. '聞こえる') has a pair of transitive-actional versus intransitive-stative verbs. Thus, while English and Chinese may have a passive sentence with a stative verb of perception, Japanese can have a passive sentence only with a transitive-actional verb, but not with an intransitive-stative verb. Moreover, the Experiencer in (3c) might be better analyzed as Goal.

(4) a. Mary's words were ({unintentionally/ *intentionally }) heard
[$_{Ex}$ by John].
b. 小華的話（ {無意中／ *有意地} ）[$_{Ex}$ 被小明] 聽到了。
c. 花子の話声が（ {偶然／ *わざと} ）[$_{Ex/Go}$ 太郎に] 聞こえた。[2]
(5) a. [$_{Ex}$ John] fears his father.
b. [$_{Ex}$ 小明] 怕他父親。
c. [$_{Ex}$ 太郎は] 父親を恐れている。
(6) a. John's remarks greatly surprised [$_{Ex}$ everyone].
b. 小明的話使 [$_{Ex}$ 大家] 大爲驚訝。
c. 太郎の話は [$_{Ex}$ 皆を] あっと驚かせた。
(7) a. John struck [$_{Ex}$ Mary] as pompous.
b. 小明給 [$_{Ex/Go}$ 小華] 的印象是爲人自大。[3]
c. 太郎は [$_{Ex/Go}$ 花子に] 傲慢な印象を与えた。[3]

(iii) Theme (Th): the entity that exists, moves or changes; when used with a locational verb it denotes an entity that exists (as in (8) through (10)), when used with a transitional verb it denotes an entity that moves (as in (11) through (13)), and when used with a transitional verb it denotes an entity that undergoes a change (as in (14) and (15)); typically an NP (animate or inanimate, concrete or abstract) and may occur as the subject of a sentence (as in (8), (11), (14)), the object of a transitive verb (as in (1a,b), (12), (13), (15)) or an adposition (as in (10b,c), (12b,c), (15b, c)). In English, Themes following adjectives and nouns are often introduced by the preposition 'of' (as in (16a) and (17a)) while Themes in Chinese may be either preceded by the preposition '把'' or '對' in an active sentence (as in (18b) and (19b)) ,depending on whether they occur with predicate verbs or adjectives. As for Japanese, predicate verbs and adjectives have nothing to do with the Case-assignment, since Cases are all assigned by postpositions. Thus, if Themes occur with intransitive verbs, they are invariably assigned the subject-marker 'が' (as in (8c), (11c), (14c), (16c)). If Themes, on the other hand, occur with transitive verbs, they are more often than not assigned the object-marker 'を' (as in (10c), (12c), (13c), (15c), (18c)). Furthermore, when Themes serve as the topics of sentences, they are assigned the topic-marker 'は' (as in (11c), (14c)).

(8) a. [$_{Th}$ The dot] is inside the circle.
b. [$_{Th}$ 點] 在圓圈裡。
c. [$_{Th}$ 点が] 円の中にある。
(9) a. The circle contains [$_{Th}$ the dot].
b. 圓圈裡含有 [$_{Th}$ 點] 。
c. 円の中に [$_{Th}$ 点が] ある。[4]
(10) a. John put [$_{Th}$ the book] on the bookshelf.
b. 小明 [$_{Th}$ 把書] 放在書架上。
c. 太郎は [$_{Th}$ 本を] 本棚の上に置いた。
(11) a. [$_{Th}$ The car] rolled down the slope.
b. [$_{Th}$ 汽車] 沿着山坡滾下去。
c. [$_{Th}$ 車 {が／は}] 坂に沿って転落した。
(12) a. John gave [$_{Th}$ the book] to Mary.
b. 小明 [$_{Th}$ 把那一本書] 給了小華。
c. 太郎は [$_{Th}$ その本を] 花子にあげた。
(13) a. Mary got [$_{Th}$ the book] from John.
b. 小華從小明（那裡）得到了 [$_{Th}$ 那一本書] 。
c. 花子は [$_{Th}$ その本を] 太郎からもらった。

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2. The permutation between '太郎に' and '花子の話声が' in (4c) results not from Passivisation but from Scrambling.
3. The Experiencer occurring in Chinese (7b) and Japanese (7c) might be better interpreted as Goal.
4. Japanese does not seem to have a verb corresponding to the English 'contain' and the Chinese '含有' in the sense used here, and (9c) is simply the result of scrambling (8c). The nearest possible translation in Japanese may be '円はその中に [$_{Th}$ 点を] 含んでいる'.

(14) a. [$_{Th}$ The prince] turned into a frog.
b. [$_{Th}$ 王子] 變成了青蛙。
c. [$_{Th}$ 王子様 {は/が}] 蛙に変わってしまった。

(15) a. The magic wand turned [$_{Th}$ the prince] into a frog.
b. 魔杖 [$_{Th}$ 把王子] 變成了青蛙。
c. 魔法の杖が [$_{Th}$ 王子様を] 蛙に変えてしまった。

(16) a. John { likes/ is fond of} [$_{Th}$ music].
b. 小明很喜歡 [$_{Th}$ 音樂] 。
c. 太郎は [$_{Th}$ 音楽が] 好きだ。

(17) a. {That the enemy might destroy [$_{Th}$ the town] /The enemy's possible destruction [$_{Th}$ of the town] } never came into the general's mind.
b. 將軍從沒有想到敵軍 (的) 可能毀滅 [$_{Th}$ 該鎮] 。
c. 将軍は敵の軍隊が [$_{Th}$ その町を] 破壊するとは思いもよらなかった。

(18) a. Mary has { cleaned [$_{Th}$ the room] / [$_{Th}$ the room] cleaned } .
b. 小華 {打掃了 [$_{Th}$ 房間] / [$_{Th}$ 把房間] 打掃了} 。
c. 花子は [$_{Th}$ 部屋を] 掃除した。

(19) a. He is very much concerned [$_{Th}$ about you].
b. 他 {很關心 [$_{Th}$ 你] / [$_{Th}$ 對你] 很關心} 。
c. 彼は { [$_{Th}$ 君のことを] 心配して/ [$_{Th/Go}$ 君のことに] 関心を寄せて} いる。

(iv) Goal (Go): the receiver as destination, including the later state or end result of some action or change, animate (recipient) or inanimate (destination or temporal end-point); often occurring as complements (as in (20)) or as adverbials (as in (24) and (25)), but sometimes as subjects (as in (22)) or as objects (as in (21a,b) and (23)). Recipient complements are often introduced by the adpositions 'to; 給; に'(as in (20)), destination adverbials by 'to, into, onto; 到; に, へ'(as in (24)), and temporal end-point adverbials by 'to, till, until, through; 到; まで'(as in (25)):

(20) a. John gave his old car [$_{Go}$ to Mary].
b. 小明把他的舊車子送 [$_{Go}$ 給小華] 。
c. 太郎は古い車を [$_{Go}$ 花子に] 譲った。

(21) a. John gave [$_{Go}$ Mary] his old car.
b. 小明送 [$_{Go}$ (給) 小華] 他的舊車子。
c. 太郎は [$_{Go}$ 花子に] 古い車を譲った。

(22) a. [$_{Go}$ John] finally received the letter.
b. [$_{Go}$ 小明] 終於收到了那一封信。
c. [$_{Go}$ 太郎は] ついにその手紙を受け取った。

(23) a. The letter finally reached [$_{Go}$ John].
b. 那一封信終於到達了 [$_{Go}$ 小明那裡] 。
c. その手紙はついに [$_{Go}$ 太郎の手元に] 届いた。

(24) a. They traveled from Boston [$_{Go}$ to New York].
b. 他們從波士頓旅行 [$_{Go}$ 到紐約] 。
c. 彼らはボストンから [$_{Go}$ ニューヨーク {へ/に}] 旅行した。

(25) a. We will be staying here from June {to/ till/ until/ through} [$_{Go}$ August].
b. 我們從六月 [$_{Go}$ 到八月] 會停留在這裡。
c. 私達は六月から [$_{Go}$ 八月まで] ここに滞在する。

(v) Source (So): the origin or starting point, including an earlier location, state or time point, often used in conjunction with Goal, which indicates the later location, state or time point; mostly occurring as adverbials and introduced by such adpositions as 'from, since (time point); 從, 由, {自/ 打} 從 (time point); から' (as in (26), (27) and (28)). When used with verbs of trading and transition, however, Source can be a human NP (as in (29)) and, moreover, may occur as subject (as in (30) and (32)) or as object (as in (31)):

(26) a. They moved [$_{So}$ from the city] into the country.
b. 他們 [$_{So}$ 從城市] 搬到鄉間。
c. 彼らは [$_{So}$ 都会から] 田舎へ引っ越した。

(27) a. The meeting lasted [$_{So}$ from nine] to eleven.

b. 會議 [$_{So}$ 從九點] 持續到十一點。
c. 会議は [$_{So}$ 9時から] 11時まで続いた。
(28) a. I have been here [$_{So}$ since this morning].
b. 我 [$_{So}$ 從今天早上起] 一直在這裡。
c. 私は [$_{So}$ 今朝から] ずっとここにいた。
(29) a. John bought the house [$_{So}$ from Mary].
b. 小明 [$_{So}$ 從小華（那裡）] 買了那一棟房子。
c. 太郎は [$_{So}$ 花子から] あの家を買った。
(30) a. [$_{So/Ag}$ Mary] sold the house to John.
b. [$_{So/Ag}$ 小華] 那一棟房子賣給小明。
c. [$_{So/Ag}$ 太郎 {が／は}] あの家を花子に売った。
(31) a. The magic wand turned [$_{So/Th}$ the prince] into a frog.
b. 魔杖把 [$_{So/Th}$ 王子] 變成青蛙。
c. 魔法の杖は [$_{So/Th}$ 王子様を] 蛙に変えてしまった。
(32) a. [$_{So/Th}$ The prince] turned into a frog.
b. [$_{So/Th}$ 王子] 變成了青蛙。
c. [$_{So/Th}$ 王子様 {が／は}] 蛙に変わってしまった。

(vi) Benefactive (Be): the person affected favorably (beneficiary) or unfavorably (maleficiary) because of an action performed by the agent or an event that took place, typically an animate or human NP; often occurring as complements or as adverbials and introduced by such adpositions as 'for (beneficiary), on (maleficiary), on behalf of; 給 (in preverbal adverbials or postverbal complements), 替 (only in preverbal adverbials), 衝着 (maleficiary); に, のために'. When used with ditransitive verbs, however, Benefactive may occur in the object position (as in (33a')).

(33) a. John bought a mink coat [$_{Be}$ for Mary].
a'. John bought [$_{Be}$ Mary] a mink coat.
b. 小明買了一件貂皮大衣 [$_{Be}$ 給小華] 。
b'. 小明 [$_{Be}$ 給小華] 買了一件貂皮大衣。
c. 太郎はミンクのコートを [$_{Be}$ 花子に] 買ってあげた。
c'. 太郎は [$_{Be}$ 花子に] ミンクのコートを買ってあげた。
(34) a. John cleaned the room [$_{Be}$ for Mary].
b. 小明 [$_{Be}$ {替／給} 小華] 打掃了房間。
c. 太郎は [$_{Be}$ 花子のために] 部屋を掃除し（てあげ）た。
(35) a. John bought the book [$_{Be}$ for Mary] [$_{Be}$ on behalf of his brother].
b. 小明 [$_{Be}$ {替／給} 他的哥哥] 買了那一本書 [$_{Be}$ 給小華] 。
c. 太郎は [$_{Be}$ 兄貴に代わって] [$_{Be}$ 花子（のため）に] その木を
買ってあげた。
(36) a. The joke was [$_{Be}$ on me]; Don't play jokes [$_{Be}$ on him].
b. 那個玩笑是 [$_{Be}$ 衝着我] 來的; 不要開 [$_{Be}$ 他（的）] 玩笑。
c. その冗談は [$_{Be}$ 私に] 向けられたものだ;
[$_{Be}$ 彼に] いたずらをするのはよせ。

Moreover, Benefactive may be generalized to include the following cases.

(37) a. [$_{Be}$ John] { suffered a stroke / underwent an operation } last night.
b. [$_{Be}$ 小明] 昨天晚上 {中了風／開了刀} 。
c. [$_{Be}$ 太郎は] 昨夜 {中風で倒れた／手術を受けた} 。
(38) a. [$_{Be}$ Mary] { had/ got } her arm broken by accident.
b. [$_{Be}$ 小華] 不小心把手臂給弄斷了。
c. [$_{Be}$ 花子は] うっかり手を折ってしまった。

(vii) Instrument (In): the thing, tool, device or means used by Agent, typically an inanimate NP (concrete (tool) or abstract (means)); often used as adverbials and introduced by such adpositions as 'with (tool), by (means); 用 (tools, means), 搭, 坐 (transportation); で'. In the absence of Agent, however, Instrument may be promoted to become the subject (as in (42)).

(39) a. John crushed the piggybank [$_{In}$ with a hammer].
b. 小明 [$_{In}$ 用鐵槌] 打碎了撲滿。
c. 太郎は [$_{In}$ 金槌で] 貯金箱をぶち壊した。
(40) a. John got the money from Mary [$_{In}$ by a trick].
b. 小明 [$_{In}$ 用詭計] 從小華（那裡）得到了錢。
c. 太郎は [$_{In}$ トリックで] 花子から金を取った。

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(41) a. Mary went to Boston [$_{In}$ by {plane/car/sea}].
b. 小華 [$_{In}$ {搭飛機／坐汽車／坐船／經海路}] 到了波斯頓。
c. 花子は [$_{In}$ {飛行機／車／船} で] ボストンへ行った。
(42) a. [$_{In}$ John's hammer] crushed the piggybank.
b. [$_{In}$ 小明的鐵槌] 打碎了撲滿。
c. ? [$_{In}$ 太郎の金槌が] 貯金箱をぶち壊した。

(viii) Location (Lo): the location or spatial orientation of the state or action identified by the verb, typically a locative NP, often occurring as complements or as adverbials and introduced by such adpositions as 'at, in, on, under, beside, across, ...; 在…（{裡（面）／上（面）／下（面）／旁邊／對面／…}；の{中／上／下／横／向かい／…} {に (complement) ／で (adverbial)}'.

(43) a. He is studying [$_{Lo}$ at the library].
b. 他 [$_{Lo}$ 在圖書館] 讀書。
c. 彼は [$_{Lo}$ 図書館で] 勉強している。
(44) a. She stayed [$_{Lo}$ in the room] alone.
b. 她一個人留 [$_{Lo}$ 在房間裡（面）]。
c. 彼女はひとり [$_{Lo}$ 部屋の中に] 留まった。
(45) a. John put the pistol [$_{Lo}$ on the table].
b. 小明把手槍放 [$_{Lo}$ 在桌子上（面）]。
c. 太郎はピストルを [$_{Lo}$ テーブルの上に] 置いた。
(46) a. It is very noisy [$_{Lo}$ in the city];
[$_{Lo}$ The city] is very noisy.
b. [$_{Lo}$ 城市裡] 很吵鬧。
c. [$_{Lo}$ 都会は] やかましい。

(ix) Time (Ti): the time or temporal coordinate of the state or action identified by the verb, typically a temporal NP, often occurring as adverbials and introduced by such adpositions as 'at, in, on, during, before, after, ...; 在… {的時候／當中／以前／以後／…}，於；{時／前} に'. "Bare-NP" time adverbs such as 'today, tomorrow, day after tomorrow, yesterday, day before yesterday, {next/ last} { week/ month/ year} ; {今／明／後／昨／前} 天，{下／上} {星期／個月}，{明／去} 年；{今／明} 日，あさって，{昨／一昨} 日，{来／先} {週／月}，{来／去} 年', however, may occur without adpositions or even as subjects (as in (51)) or complements (as in (52)).

(47) a. They arrived [$_{Ti}$ at 10] and departed [$_{Ti}$ at 10:30].
b. 他 [$_{Ti}$（在）十點鐘] 到達，[$_{Ti}$（在）十點半] 離開。
c. 彼らは [$_{Ti}$ １０時に] 到着し，[$_{Ti}$ １０時半に]（ここを）出発した。
(48) a. Mary set the date [$_{Ti}$ for Monday].
b. 小華把日期訂 [$_{Ti}$ 在星期一]。
c. 花子は日取りを [$_{Ti}$ 月曜日に] 決めた。
(49) a. Edison was born [$_{Ti}$ in 1847] and died [$_{Ti}$ in 1931].
b. 愛廸生 {[$_{Ti}$ 於1847年] 出生，[$_{Ti}$ 於1931年] 逝世／
出生 [$_{Ti}$ 於1847年]，逝世 [$_{Ti}$ 於1931年]}。
c. エジソンは [$_{Ti}$ 1847年に] 生まれ，[$_{Ti}$ 1931年に] 亡くなった。
(50) a. I met John [$_{Ti}$ yesterday].
b. 我 [$_{Ti}$ 昨天] 遇到了小明。
c. 私は [$_{Ti}$ 昨日] 太郎に会った。
(51) a. [$_{Ti}$ Tomorrow] will be another day.
b. [$_{Ti}$ 明天] 又是一個新的日子。
c. [$_{Ti}$ 明日は] また新しい一日が来る。
(52) a. My birthday was [$_{Ti}$ day before yesterday].
b. 我的生日是 [$_{Ti}$ 前天]。
c. 私の誕生日は [$_{Ti}$ 一昨日] でした。

(x) Quantity (Qu): the generalized range or an "arch-role", which includes such "allo-roles" as "number" (Qn, as in (53) and (54)), "duration" (Qd, as in (55) through (57)), "cost" (Qc, as in (58) through (60), "length" (Ql), as in (61) through (62), "weight" (Qw), as in (64), "volume" (Qv), as in (65), "frequency" (Qf) and "measure" (Qm), as in (66) and (67); mostly consisting of a quantificational phrase (QP, i.e. a noun phrase containing a quantifier (Q)) and occurring as an adjunct (often introduced by the preposition 'for' in English). With certain predicate verbs, however, Quantity may occur as subject or topic (as in (51), (54c) and (57a)), object (as in (53),(54a,b) and (59a,b)), or complement (as in (56), (60a,b) and (62) through (65)).

(53) a. This hotel can accommodate [$_{Qn}$ five hundred guests].
b. 這家飯店可以容納 [$_{Qn}$ 五百位客人]。
c. このホテルは [$_{Qn}$ 500名の旅客を] 収容することができる。

(54) a. This large dinner table can seat [$_{Qn}$ twenty persons].
b. 這一張大飯桌可以坐 [$_{Qn}$ 二十個人]。
c. この大きな食卓は [$_{Qn}$ ２０人] すわれる。

(55) a. We studied (English) [$_{Qd}$ for two hours].
b. 我們（讀英語）讀了 [$_{Qd}$ 兩（個）小時]。
c. 私達は（英語を） [$_{Qd}$ 2時間] 勉強した。

(56) a. The conference lasted [$_{Qd}$ two hours].
b. 會議持續了 [$_{Qd}$ 兩（個）小時]。
c. 会議は [$_{Qd}$ 2時間] 続いた。

(57) a. [$_{Qd}$ Ten years] have elapsed since my son left.
b. 兒子走了以後已經過了 [$_{Qd}$ 十年] 了。
c. 息子が亡くなってから [$_{Qd}$ １０年] たった。

(58) a. I bought the book [$_{Qc}$ for fifty dollars].
b. 我 [$_{Qc}$ 以五十塊美金（的代價）] 買了那本書。
c. 私は [$_{Qc}$ ５０ドル（の値段）で] この本を買った。

(59) a. I paid [$_{Qc}$ fifty dollars] for the book.
b. 我爲了那本書付了 [$_{Qc}$ 五十塊美金]。
c. 私はこの本の（ため）に [$_{Qc}$ ５０ドル] 払った。

(60) a. The book cost me [$_{Qc}$ fifty dollars].
b. 這本書花了我 [$_{Qc}$ 五十塊美金]。
c. この本は私に [$_{Qc}$ ５０ドル（を）] 費やさせた;
私はこの本に [$_{Qc}$ ５０ドル（を）] 費やした。

(61) a. The boat measures [$_{Ql}$ 20 feet].
b. 這條船長 [$_{Ql}$ 二十英尺]; 這條船長有 [$_{Ql}$ 二十英尺] 長。
c. このボートの長さは [$_{Ql}$ ２０フィート] だ;
このボートは長さが [$_{Ql}$ ２０フィート] ある。

(62) a. The forest stretched [$_{Ql}$ for miles].
b. 那座森林延伸 [$_{Ql}$ 好幾英里]。
c. その森は [$_{Ql}$ 幾マイル（に）も] 広がっていた。

(63) a. John stands [$_{Ql}$ six feet].
b. 小明身高 [$_{Ql}$ 六英尺]; 小明有 [$_{Ql}$ 六英尺] 高。
c. 太郎の身長は [$_{Ql}$ ６フィート] だ;
太郎は身長が [$_{Ql}$ ６フィート] ある。

(64) a. Mary weighs [$_{Qw}$ one hundred pounds].
b. 小華體重 [$_{Qw}$ 100磅]; 小華有 [$_{Qw}$ 100磅] 重。
c. 花子の体重は [$_{Qw}$ 100ポンド] だ; 花子は体重が [$_{Qw}$ 100ポンド] ある。

(65) a. The cell measured [$_{Qv}$ [$_{Ql}$ eight feet] by [$_{Ql}$ five] [$_{Ql}$ eight] high].
b. 那個房間（有） [$_{Qv}$ [$_{Ql}$ 八英尺] 寬、 [$_{Ql}$ 五英尺] 長、
[$_{Ql}$ 八英尺] 高]。
c. その部屋は [$_{Qv}$ 幅 [$_{Ql}$ ８フィート]，長さ [$_{Ql}$ ５フィート]，
高さ [$_{Ql}$ ８フィート]] ある。

(66) a. We meet [$_{Qf}$ [$_{Qm}$ twice] a week].
b. 我們 [$_{Qf}$ 每星期] 見面 [$_{Qf}$ 兩次]; 我們 [$_{Qf}$ 每星期] 見 [$_{Qf}$ 兩次] 面。
c. 私達は [$_{Qf}$ 毎週] [$_{Qf}$ 2度] 会っている。

(67) a. They dine together [$_{Qf}$ every three days].
b. 他們 [$_{Qf}$ 每三天] 一起吃飯 [$_{Qm}$ 一次]。
c. 彼らは [$_{Qf}$ 3日おきに] [$_{Qm}$ 一度] 一緒に食事をしている。

(xi) Proposition (Po): the "arch-role" which consists of the subject and the predicate expressing a state, an event or an action. English propositions can be divided into semantic types such as (i) "declarative" (Pd), (ii) "interrogative" (Pq) [5] and (iii) "exclamatory" (Px), or syntactic types such as (i) "finite clauses" (Pf), (ii) "infinitival clauses with the complementizer 'for'" (Pi), (iii) "infinitival clauses without the complementizer 'for'" (Pi), (iv) "gerundive clauses with the genitive subject" (Pg), (v) "gerundive clauses with the accusative subject" ($\underline{\text{Pg}}$), (vi) "finite clauses with the past-tense verb" (Pp), (vii) "finite clauses with the root-form verb" (Pr), (viii) "infinitival (clauses) with an empty subject" (Pe), (ix) "participial or gerundive (clauses) with an empty subject" ($\underline{\text{Pe}}$), and (x) "small clauses" (Ps). With Chinese and Japanese, however, no such elaborate subclassification of syntactic types is necessary, and we need only to identify four proposition types, namely, Pd, Pq, Px and Pe.

(68) a. I know [$_{Pf}$ (that) John is a nice boy].
b. 我知道 [$_{Pd}$ 小明是好男孩] 。
c. 私は [[$_{Pd}$ 太郎がよい子だ] ということを] 知っている。
(69) a. She whispered [$_{\underline{Pf}}$ * (that) she had secretly bought the car].
b. 她低聲（地）說 [$_{Pd}$ 她偷偷地買了車] 。
c. 彼女は [[$_{Pd}$（彼女が）こっそり車を買った] と] ささやいた。
(70) a. I asked Mary [$_{Pq}$ {whether / if} she knew the answer].
b. 我問小華 [$_{Pq}$ 她 {是否/ 知（道）不} 知道答案] 。
c. 私は花子に [[$_{Pq}$（彼女が）答えを知っているか（ {知らない／どう} か）（と）] 尋ねた。
(71) a. We don't know [$_{Pq}$ {whether (or not) /when /where / how } we should go].
b. 我們不知道 [$_{\underline{Pq}}$（我們） {該不該／什麼時候該／該到什麼地方／該怎麼} 去] 。
c. 私達は [$_{\underline{Pq}}$（私達が） {果たして[6] ／いつ／どこへ／どういうふうに（して）} 行くべきか] 知らない。
(72) a. We don't know [$_{\underline{Pq}}$ {whether (or not)/ when/where/how} PRO to go].
b. 我們不知道 [$_{\underline{Pq}}$ PRO {該不該／什麼時候該／該到什麼地方／該怎麼} 去] 。
c. 私達は [$_{\underline{Pq}}$ PRO {果たして／いつ／どこへ／どういうふうに（して）} 行くべきか] 知らない。
(73) a. Could you tell us { [$_{Pq}$ what we should/[$_{Pq}$ what PRO to} do] ?
b. 你能告訴我們 { [$_{Pq}$ 我們／[$_{\underline{Pq}}$ PRO } 該做什麼] 嗎？
c. { [$_{Pq}$ 私達が／[$_{\underline{Pq}}$ PRO } どうすればよいか] 教えていただけませんか。
(74) a. I didn't know [$_{Px}$ what a smart girl Mary is].
b. 我並不知道 [$_{Px}$ 小華（竟然）是這麼聰明的女孩子] 。
c. [[$_{Px}$ 花子がこんなに頭がよい子（だ）] とは] 知らなかった。
(75) a. They never imagined [$_{Px}$ how very smart she is].
b. 他們（做夢也）沒有想到 [$_{Px}$ 她（竟然）這麼聰明] 。
c. [[$_{Px}$ 花子がこんなに頭がよい] とは] （夢にも）思わなかった。
(76) a. We consider { [$_{Pf}$ that Shakespeare is/ [$_{\underline{Pi}}$ Shakespeare to be/ [$_{Ps}$ Shakespeare ϕ} a great poet].
b. 我們認爲 [$_{Pd}$ 莎士比亞是偉大的詩人] 。
c. 私達は [[$_{Pd}$ シェークスピアが偉大な詩人だ] と] 思っている。
(77) a. John expects { [$_{Pf}$ that Mary will/ [$_{\underline{Pi}}$ Mary to} succeed].
b. 小明 {期待／預料} [$_{Pd}$ 小華會成功] 。
c. 太郎は [[$_{Pd}$ 花子が {成功する] ことを] 期待している／成功するだろう] と] 予測している。
(78) a. John wanted {(it) very much [$_{Pi}$ for Mary/ [$_{\underline{Pi}}$ Mary } to succeed].
b. 小明渴望 [[$_{Pd}$ 小華成功] 。

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5. Interrogative clauses can be further subdivided into "finite interrogatives" (Pq) and "infinitival interrogatives" ($\underline{\text{Pq}}$). Declarative clauses can also be subclassified into those in which the complementizer 'that' may be optionally deleted (Pf) and those in which the complementizer 'that' may not be deleted ($\underline{\text{Pf}}$; e.g. the complementizer 'that' following "manner of speaking" verbs such as 'shout, scream, shriek, mumble, mutter, whine, lisp, whisper, murmur, quip.

'6. We can also say '私達は [$_{Pq}$（私達が）（果たして）行くべきかどうか] 知らない。'

c. 太郎は {[$_{Pd}$ 花子が成功する] {こと／の} を} (しきりに) 願っている。

(79) a. Do you mind {[$_{Pg}$ my/ [$_{Pg}$ me} wearing your necktie]?
b. [$_{Pd}$ 我用你的領帶] 可以嗎？
c. [[$_{Pd}$ あなたのネクタイをつけて] も] かまいませんか。

(80) a. I wish [$_{Pp}$ I were a bird].
b. 但願 [$_{Pd}$ 我是隻鳥] 。
c. [[$_{Pd}$ 私が鳥であ {った] ら] ／れ] ば] } どんなによいことか。

(81) a. John insisted [$_{Pr}$ that Mary {be/ stay} here with him].
b. 小明堅持 [$_{Pd}$ 小華（一定要）跟他在一起] 。
c. 太郎は [[$_{Pd}$ 花子が彼と一緒にいる] ことを] （強く）求めた。

(82) a. They found {[$_{Pi}$ that the place was /[$_{Pi}$ the place to be/
[$_{Ps}$ the place ϕ} deserted].
b. 他們發覺 [$_{Pd}$ 那個地方空無人影] 。
c. 彼らは [[$_{Pd}$ その場所には誰もいない] ことを] 発見した。

(83) a. John saw [$_{Ps}$ {Mary / her} ϕ walk into the restaurant].
b. 小明看見 [$_{Pd}$ {小華／她} 走進餐廳] 。
c. 太郎は [[$_{Pd}$ {花子／彼女} が食堂に入って行 {く／った}] のを] 見た。

(84) a. John tried [$_{Pe}$ PRO to reach Mary].
b. 小明設法 [$_{Pe}$ PRO（去）聯絡小華] 。
c. 太郎は [[$_{Pe}$ PRO 花子に連絡しよう] と] 試みた。

(85) a. John forced Mary [$_{Pe}$ PRO to marry him].
b. 小明強迫小華 [$_{Pe}$ PRO 跟他結婚] 。
c. 太郎は花子に [[$_{Pe}$ PRO 彼と結婚する {ことを／よう}] 強要した。

(86) a. John promised Mary [$_{Pe}$ PRO to marry her].
b. 小明答應小華 [$_{Pe}$ PRO 跟他結婚] 。
c. 太郎は花子に [[$_{Pe}$ PRO 結婚する] {こと／の} を] 約束した。

In the above discussion, we have postulated and identified a set of theta-roles which seem to be necessary for contrastive analysis of English, Chinese and Japanese, based on such formal criteria as (i) the Principle of One-Instance-per-Clause (i.e. only one instance of each theta-role may occur in a simple clause [7], (ii) the Principle of Complementary Distribution (i.e. those arguments which are in complementary distribution must fall under the same theta-role), (iii) the Principle of Conjoinability (i.e. only arguments which fall under the same theta-role can be conjoined, and (iv) the Principle of Comparability (i.e. only arguments which fall under the same theta-role can be compared). Our postulated theta-roles are perhaps more concrete than those proposed by other scholars, because we have taken into consideration not only the semantic content of theta-roles but also their distribution in terms of syntactic function, canonical structure realization in terms of syntactic category, and when they occur with adpositions (including prepositions and postpositions), unmarked manifestations of these adpositions. Thus, our postulated theta-roles ((i) through (xi)), syntactic functions into which they may enter, syntactic categories in which they may occur, and adpositions with which they may typically co-occur are summarized as follows.

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7. This principle, however, does not prohibit the same theta-role from occurring as obligatory and optional arguments in a simple clause. In the following sentences, for example, two instances of Location and Benefactive occur, one as semantic argument (i.e. adjunct) and another as indirect internal argument (i.e. complement).

(i) a. (While) [$_{Lo}$ in the classroom] Mary placed the flowers [$_{Lo}$ on the teacher's desk].
b. [$_{Lo}$ 在教室裡] 小華把花擺 [$_{Lo}$ 在老師的　子上] 。
c. 花子は [$_{Lo}$ 教室の中で] [$_{Lo}$ 先生の机の上に] 花を置いた。

(ii) a. John bought a wristwatch [$_{Be}$ for Mary] [$_{Be}$ on behalf of her mother].
b. 小明 [$_{Be}$ {替／給} 小華的母親] 買了一隻手 [$_{Be}$ 給小華] 。
c. 太郎は [$_{Be}$ 花子の母親 {のために／に代わって}] [$_{Be}$ 花子に] 時計を買ってあげた。

(87)

(i) Agent (Ag): (a) subject (animate NP);
(b) oblique object (PP; 'by; 被, 讓, 給; に')

(ii) Experiencer (Ex): (a) subject (animate NP);
(b) object (animate NP);
(c) oblique object (PP; 'by; 被, 讓, 給, 使; に').

(iii) Theme (Th): (a) subject (animate or inanimate NP);
(b) object (animate or inanimate NP);
(c) oblique object (PP; 'of; 把, 對; に').

(iv) Goal (Go): (a) complement (PP; 'to (unmarked), into, onto (locative), till, until, through (temporal); 給 (animate recipient), 到 (locative or temporal end-point); に (unmarked), へ (locative), まで (temporal)'; NP (when preposed in English and Chinese ditransitive constructions));
(b) adjunct (PP; adpositions (the same as those in complements));
(c) subject (NP);
(d) object (NP).

(v) Source (So): (a) adjunct (PP; 'from (unmarked), since (temporal); 從 (unmarked), 由 (locative), {自／打} 從 (temporal); から');
(b) subject (NP);
(c) object (NP).

(vi) Benefactive (Be): (a) complement (PP with animate object NP; 'for; 給; に'); NP (when preposed in English ditransitive constructions, animate);
(b) adjunct (PP with aminate object NP; 'for, on behalf of; 給, 替, 爲了; に, のために');
(c) subject (animate NP).

(vii) Instrument (In): (a) adjunct (PP with inanimate object NP; 'with (tool), by (means); 用 (tool, means), 搭, 坐 (transportation); で');
(b) subject (inanimate NP).

(viii) Locative (Lo): (a) complement and adjunct (PP with locative object NP; 'at, in, on, under, beside, across, …; 在…({裡（面）／上（面）／下（面）／旁邊／對面／…}); の {中／上／下／横／向かい／…} {に (comlement)／で (adjunct)} ');
(b) subject (locative NP).

(ix) Time (Ti): (a) adjunct (PP with temporal object NP; 'at, in, on, during, before, after, ...; 在… {的時候／當中／以前／以後／…} ; {時／前／後} に'; NP (bare-NP temporal adverb);
(b) subject (temporal NP).

(x) Quantity (Qu): (a) complement (QP);
(b) adjunct (PP with QP as object; 'for'; QP; QP);
(c) subject (QP);
(d) object (QP).

(xi) Proposition (Pr): (a) subject (Pd, Pq, $\underline{Pq}$, Px, Pf, Pi, Pg, Pr, Pe, $\underline{Pe}$, Pd, Pq, $\underline{Pq}$, Px, Pe; $\overline{Pd}$, Pq, $\underline{Pq}$, Px, Pe);
(b) object (Pd, $\overline{\underline{Pd}}$, Pq, $\underline{Pq}$, Px, Pf; $\overline{Pi}$, $\underline{Pi}$, Pg, $\underline{Pg}$, Pe, $\underline{Pe}$ Pp, Pr, Ps; $\overline{Pd}$, Pq, $\overline{\underline{Pq}}$, Px, Pe; Pd, $\overline{Pq}$, $\underline{Pq}$, $\overline{Px}$, Pe);
(c) complement (Pd, Pq, $\overline{\underline{Pq}}$, Px, Pf, Pi, $\underline{Pi}$, $\overline{Pe}$, $\underline{Pe}$, Pr; Pd, Pq, $\underline{Pq}$, Pe; Pd, $\overline{Pq}$, $\underline{Pq}$, Pe);
(d) adjunct ($\overline{Pi}$, $\underline{Pi}$, Pg, $\underline{Pg}$, Ps (English)).

The eleven theta-roles listed above are essential but by no means exhaustive, and additional theta-roles may be proposed on empirical grounds. English verbs occurring in (88) through (90), for example, must take as complement Manner (Ma), which may be adverbs or prepositional phrases introduced by 'with'. In the corresponding Chinese and Japanese verbs, however, Manner may occur either as complements (as in (88b) and (89b)) or as adjuncts (as in (90b), (88c), (89c) and (90c)).

(88) a. He behaved { [$_{Ma}$ badlly] to his wife/ [$_{Ma}$ with great courage]} .
b. 他 {對太太（表現得） [$_{Ma}$ 很不好]／表現得 [$_{Ma}$ 很勇敢] } 。
c. 彼は妻に [$_{Ma}$ ひどくあたった] ／とても勇敢に] ふるまった} 。

(89) a. She always treated us [$_{Ma}$ {well/ with the utmast courtesy}
b. 她經常待我們 [$_{Ma}$ {很不好／非常有禮貌}] 。
c. 彼女はいつも {私達に [$_{Ma}$ よく] してくれた／私達を [$_{Ma}$ とても丁重に] あつかってくれた} 。

(90) a. I {phrased/ worded } my excuse [$_{Ma}$ {carefully/ with care}].
b. 我（措辭） [$_{Ma}$ 小心地] 說出我的辯白。
c. 私は [$_{Ma}$ 注意深く] 弁解（の言葉）を述べた。

Theta-roles such as Cause (Ca), Result (Re) and Condition (Co) may also be proposed to specify various adverbials or adjuncts. These theta-roles, moreover, may also occur as subjects or objects. Cause in (92), as opposed to Instrument in (91), for example, may occur as subject and account for the difference in syntactic behavior between these two theta-roles. Likewise, Result occurring as object in (94) and Theme occurring as object in (93) are differentiated by their syntactic behaviors in pseudo-cleft sentences in English and passive sentences in Chinese and Japanese. Compare.

(91) a. John burned down the house [$_{In}$ with fire];
The house was burned down by John [$_{In}$ with fire].
b. 小明 [$_{In}$ {用／放} 火] 燒毀了房子; 房子被小明 [$_{In}$ {用／放} 火] 燒毀了。
c. 太郎が [$_{In}$ 火 {で／をつけて}] 家を焼きはらってしまった;
家は太郎が [$_{In}$ 火 {で／をつけて}] 焼きはらってしまった。

(92) a. [$_{Ca}$ A fire] burned down the house;
The house was burned down [$_{Ca}$ by a fire].
b. [$_{Ca}$ 一場火警] 燒毀了房子。
房子 [$_{Ca}$ 被一場火警燒毀了] 。
c. [$_{Ca}$ 火事が] 家を焼いてしまった;
家が [$_{Ca}$ 火事で] 焼けてしまった。

(93) a. They finally destroyed [$_{Th}$ the house].
[$_{Th}$ The house] was finally destroyed (by them);
What they did to [$_{Th}$ the house] was destroy it.
b. 他們終於拆毀了 [$_{Th}$ 房子];
[$_{Th}$ 房子] 終於被（他們）拆毀了。
c. 彼らはついに [$_{Th}$ 家を] とりこわした;
[$_{Th}$ 家は] ついに（彼らに）とりこわされた.

(94) a. They finally built [$_{Go}$ the house];
[$_{Go}$ The house] was finally built (by them);
*What they did to [$_{Go}$ the house] was build it.
b. 他們終於蓋了 [$_{Go}$ 房子];
*[$_{Go}$ 房子] 終於被他們蓋了。
c. 彼らはついに [$_{Go}$ 家を] 建てた;
*[$_{Re}$ 家は] ついに（彼らに）建てられた。

Note also that Manner, Cause, Result and Condition (Co) may occur as semantic arguments or adverbials in the form of adverbs (e.g. 'A-ly ; A 地 ; A く'), adpositional phrases introduced by adpositions (e.g. 'with (care), in (peace); 以（A 的態度）, 如（NP（一）般（地）, 像（NP）一樣）; （ {慎重／静か／ NP のよう} に, （ {ちゃん／きちん／しっかり} ）と, (NP の) 如く'; 'for (the sake of), because of, owing to, with a view to, from (thirst), of (hunger), in order to (VP), so as to (VP) ; {爲了／由於／因爲} NP, {以便／藉以／用以} VP; (NP) のため（に), (NP) で, (V(i)) に,(A く) て'; 'in {case/the event} of' or subordinate clauses introduced by subordinate conjunctions (e.g. ' { as/ as if/ like} S; （ {猶／宛} ）如 S（一般）; S {が如く／かのように} '; ' { for/ because/ as/ since/ now that} S; {因爲／由於／好讓} S; S {ので／から／ゆえ／ため（に）} ; 'so {A /Ad } that/ so much so that/ such that} S; 以致於 S; … {過ぎて／ので} ; ' {if /in case (that)/provided (that)/ in the event that / unless} S; {如果／假如／假使／假若／要（不）是／除非} S; （ {V-(r)u/V-(a)ない} と, （ {V-(Ta)/V-

(a)なかった}) ら, ({V-(r)e/V-(a)n(aker)e}) ば, ({V-(r)u/V-(a)ない})なら'). Moreover, adpositions (including prepositions and postpositions) and conjunctions can be analyzed as two-term predicates, with adpositions taking NPs as complements and various maximal projections (e.g. VPs, IPs) as specifiers, subordinate conjunctions taking subordinate clauses as complements and principal clauses as specifiers, and coordinate conjunctions taking coordinate maximal projections (e.g. NPs, VPs, APs, AdPs, IPs, CPs) as conjuncts (or, alternatively, as complements and specifiers in a revised version of the X-bar Convention to be dicussed in section 5).

4. The Theta-grid: its Contents and Formalization

As discussed above, the syntactic properties of predicate verbs, adjectives and nouns include argument and thematic properties of these predicates, along with categorial features and syntactic functions of their accompanying arguments. Now our task is how to register these syntactic properties in the form of theta-grids as simply and explicitly as possible, so that they can be projected into sentences in as economical and straightforward a manner as possible.

(i) In principle, only obligatory arguments (that is, internal arguments, including direct internal arguments (= objects), indirect internal arguments (= indirect objects or complements) and external arguments (= subjects)) will be registered in the theta-grid, and semantic arguments (that is, adjectival and adverbial adjuncts) will be handled by lexical redundancy rules such as (95):

(95) a. [... Xx] --> [... In, Ma, So, Go, Lo, Ti, Re, Xx]
John studied English. --> John studied English diligently at the library yesterday for today's examination.
b. [... Xx] --> [... Re, Ti, Lo, So, Go, In, Ma, Xx]
小明讀英語. --> 小明 爲了準備今天的考試, 昨天 在圖書館 認眞地 讀英語.
c. <... Xx> --> <...Re, Ti, Lo, So, Go, In, Ma, Xx>[8]
太郎は 英語を 勉強した. --> 太郎は 今日の試験のために 昨日 図書館で 熱心に 英語を勉強した.

The lexical redundancy rule (95) states that semantic arguments or adverbial adjuncts such as In(strument), Ma(nner), So(urce), Go(al), Lo(cation), Ti(me), Re(ason) should be inserted between the external argument 'Xx' and the rest of arguments '...' (in the case of absolute intransitive verbs which contain only external arguments in their theta-grids, these adjuncts simply follow the external argument) in the order given. The actual positioning of these adjuncts in surface sentences will be decided by the Head Parameter for each language. In English, which is basically head-initial in phrasal constructions, adverbial adjuncts follow the predicate verb and internal arguments, while in Chinese and Japanese, which are basically head-final in phrasal constructions, adverbial adjuncts precede the predicate verb and internal arguments. As for adverbial adjuncts that are idiosyncratic in occurrence and distribution, their idiosyncracies will be specified in the theta-grids of these adjuncts (see the relevant discussion in (xiii) below). The distinction between obligatory versus optional arguments is important because obligatory arguments behave differently from optional ones in terms of the position they may occupy in a sentence and the adposition they may select. Benefactives in Chinese, for example, must take the preposition '給' when they occur postverbally as obligatory arguments, but may take either '給', '替' or '爲' when they occur preverbally as optional adjuncts, as illustrated in (96). Locatives in Japanese take the postposition 'に' when occurring as internal arguments but take 'で' when occurring as semantic arguments, as illustrated in (97):

(96) a. 我寄了一封信 [Be 給小明].
b. 我 [Be { 給 / 替 / 爲 }小明] 寄了一封信.
(97) a. 太郎は [Lo 東京に] 住んでいる.
b. 太郎は [Lo 東京で] 働いている.

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[8] The angle brackets ('<...>') for the Japanese theta-grid indicate that the order of the argument listed may be scrambled in surface sentences.

(ii) There are verbs that can be used both transitively and intransitively. Ergative verbs, for example, can be used as inchoative-intransitive as well as causative-transitive verbs, in which case the external argument Agent of the ergative verb 'open; 開; 開く[9]' is placed in the parentheses ('(Xx)') along with the internal argument Theme, as in '[Th (Ag)]', to indicate the combination of the causative-transitive '[Th, Ag]' and the inchoative-intransitive '[Th]'. Thus, the theta-grid '[Th (Ag)]' will project to yield the causative-transitive (98) and inchoative-intransitive (99) sentences.

(98) a. [$_{Ag}$ John] opend [$_{Th}$ the door] slowly.
b. [$_{Ag}$ 小明] 慢慢地 開了 [$_{Th}$ 門].
c. [$_{Ag}$ 太郎は] ゆっくりと [$_{Th}$ ドアを] 開いた.
(99) a. [$_{Th}$ The door] opened slowly.
b. [$_{Th}$ 門] 慢慢地 開了.
c. [$_{Th}$ ドアは] ゆっくりと 開いた.

Certain transitive verbs (e.g. 'finish; 做完; すま{せる/す}') may optionally delete their objects in surface sentences, in which case the internal argument may be placed in the parentheses (e.g. [(Th) Ag]) to indicate its optionality and will project into sentences such as (100):

(100) a. Have you already finished ([$_{Th}$ your homework])?
b. 你已經做完了 ([$_{Th}$ 你的作業]) 嗎?
c. もう ([$_{Th}$ 宿題{を/は}]) 濟ま{せ/し}たの?[10]

Thus, the English verbs 'eat, dine, devour' are distinguished in their theta-grids, respectively, as '[(Th) Ag]', '[Ag]'[11] and '[Th, Ag]', which will yield sentences such as (101):

(101) a. What time do we eat ([Th dinner])?
b. What time do we dine?
c. The lion devoured [Th the deer]).

(iii) There are also ditransitive verbs that take two internal argumets (i.e. objects), direct and indirect, either of which may be optionally deleted. In this case, "linked parentheses" ('(Xx)(Yy)') may be used to indicate an optional choice of either 'Xx' or 'Yy'. Moreover, with many English and Chinesse ditransitive verbs, indirect objects may either follow or precede direct objects in surface sentences. This optional permutation between direct and indirect internal arguments can be represented in their theta-grids by the use of angle brackets ('<Xx, Yy>')[12]. Thus, ditransitive verbs such as 'send; 送; 送る', 'teach; 教; 教える' and 'ask; 問; 聞く' may have the theta-grids '[<Th (Go)> Ag][13]; [<Th ((給)Go)> Ag]; <Th (Go) Ag>', '[<(Th

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9. While the English verbs 'open; close, shut' and the Chinese verbs '開, 打開; 關, 關閉' are all ergative verbs, among the Japanese verbs '開(ひら)く, 開ける, 開(あ)く; 閉じる, 閉める, 閉まる', only '開(ひら)く' and '閉じる' are ergatives, and '開ける; 閉める' and '開(あ)く, 閉まる' are transitives and intransitives, respectively.

10. Many Japanese, however, seem to prefer using the intransitive verb '濟む', as illustrated in 'もう宿題は濟んだの?'.

11. In addition to '[Ag]', the verb 'dine' also has the theta-grid '[Qu, Lo]', which yields sentences like '[Lo This table] can dine [Qu twelve persons]' and '[Qu How many people] can [Lo this restaurant] dine?'. The theta-grids '[Ag]' and '[Qu, Lo]' can be combined into one by the use of curly brackets ('{Xx/Yy}'); namely, '[{Ag/Qu, Lo}]'.

12. Since all the arguments in Japanese, obligatory or otherwise, can be scrambled or permuted, which is indicated in the theta-grid by the use of angle brackets rather than that of square brackets, there is no need to insert angle brackets within the angle brackets.

}Go)> Ag]; [(Go}Th) Ag];<Th (Go) Ag>' and '[<(Th}of Go)> Ag][14]; [(Go}Th) Ag]; <Th (Go) Ag>', respectively, yielding sentences such as (102) through (104):

(102) a. John sent {[$_{Th}$ a box of chocolates] ([$_{Go}$ to Mary])/ [$_{Go}$ Mary]
[$_{Th}$ a box of chocolates]}.
b. 小明 送了 {[$_{Th}$ 一盒巧克力糖] ([$_{Go}$ 給小華])/ [$_{Go}$ (給)小華]
[$_{Th}$ 一盒巧克力糖]}.
c. 太郎は {[$_{Th}$ チョコレートを一箱] [$_{Go}$ 花子に]}/ [$_{Go}$ 花子に]
[$_{Th}$ チョコレートを一箱]} 送った.
(103) a. Who is teaching {([$_{Th}$ Engilish]) [$_{Go}$ to your brother]/
[$_{Go}$ your brother] ([$_{Th}$ English])/ [$_{Th}$ English]}?
b. 誰在教 {[$_{Go}$ 你弟弟] [$_{Th}$ 英語]/ [$_{Go}$ 你弟弟]/ [$_{Th}$ 英語]}?
c. 誰が ([$_{Go}$ 君の弟に]) [$_{Th}$ 英語を] 教えているの?
(104) a. We asked {[$_{Th}$ a question] ([$_{So}$ of Mr. Lee])/
[$_{So}$ Mr. Lee] ([$_{Th}$ a question])}.
b. 我們 問了 {[$_{Go}$ 李先生] [$_{Th}$ 一個問題]/ ([$_{Go}$ 李先生]/ [$_{Th}$ 一個問題]}.
c. 私達が ([$_{Go}$ リー先生に]) [$_{Th}$ 問題を] 聞いた.

(iv) Predicate verbs that have more than one surface realization can be so indicated in their theta-grids by the use of curly braces and angle brackets. Verbs like 'blame; 怪罪; 責める' and 'load; 裝(載); (どっさり)積む', which take two permutable NP and PP complements in English, for example, will have the theta-grids '[{Be for Ca/ Ca, on Be} Ag]; [Be, Ca, Ag]; <Be, Ca, Ag>' and '[{Th, Lo/ Lo, with Th} Ag]; [Lo, Th, Ag]; <Th, Lo, Ag>', respectively, yielding sentences such as (105) and (106):

(105) a. John blamed {[$_{Be}$ Mary] [$_{Ca}$ for the accident]/ [$_{Ca}$ the accident]
[$_{Be}$ on Mary]}.
b. 小明 [$_{Ca}$ 爲了車禍] (而)怪罪 [$_{Be}$ 小華].
c. 太郎が [$_{Ca}$ 事故のことで] [$_{Be}$ 花子を] 責めた.
(106) a. John loaded {[$_{Th}$ the furniture] [$_{Lo}$ {on/ onto/ into} the truck]/
[$_{Lo}$ the truck]/ [$_{Th}$ with the furniture]}.[15]
b. 小明 {[$_{Th}$ 把家具] 裝 [$_{Lo}$ 在卡車 {上/裏}面]/ [$_{Lo}$ 在卡車 {上/裏}面]} 裝滿了.
c. 太郎が [$_{Lo}$ トラックの{上/中}に] [$_{Th}$ 家具を] (どっさり) 積んだ.

Similarly, verbs like 'talk; 談(論); 話す' and 'hear; 聽到; 聞く', which take two PP-complements that can be permuted in English, will have the theta-grids '[<Go, about Th> Ag]; [(有關)Th的事情, 跟Go, Ag]; <Th(のこと)について, Goと, Ag>]' and '[<So, about Th> Ex][16]; [(有關)Th的消息, So, Ex]; <Thのこと, So, Ex>', respectively, yielding sentences such as (107) and (108):

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13. The underline under a theta-role ('Xx') denotes that this theta-role is inherently Case-marked and thus does not require a structural Case assigned by a transitive verb or a preposition.

14. The spelling-out of the Goal preposition 'of' in the theta-grid for the English verb 'ask' indicates that this is a "marked" representation of the Goal preposition, whose unmarked manifestation is 'to'.

15. There is a difference in interpretation, however, between 'John loaded the furniture on the truck' (partitive reading) and 'John loaded the truck with the furniture' (holistic reading). The holistic reading is conveyed in Chinese and Japanese, not by the difference in word order, but by such adverbial expressions as '(裝)滿' and 'どっさり(積む)'.

16. The English verb 'hear' has, in addition, the theta-grid '[{Th, So/ So, Pd} Ex]', corresponding to the Chinese verb '聽到 Th, 聽說 Pd' ([{Th/ So 說 Pd} Ex]) and the Japanese verb '聞く' (<{Th/ Pdこと} So, Ex>), yielding sentences such as 'I heard {the news from him/ from him that his wife was ill}; 我{從他(那裏)聽到這個消息/ 聽他說他的太太病了}; 私は彼から {この消息/ 彼の妻が病氣であること}を聞いた'.

(107) a. John talked {[$_{Go}$ to Mary] [$_{Th}$ about the party]/
[$_{Th}$ about the party] [$_{Go}$ to Mary]}.
b. 小明 [$_{Go}$ 跟小華] 談 [$_{Th}$ (有關)車禍的事情].
c. 太郎は [$_{Go}$ 花子に] [$_{Th}$ 事故のことを] 話した.
(108) a. I heard {[$_{So}$ from him] [$_{Th}$ about the accident]/
[$_{Th}$ about the accident] [$_{So}$ from him]}.
b. 我 [$_{So}$ 從他(那裏)] 聽到 [$_{Th}$ (有關)車禍的消息].
c. 我は {[$_{Th}$ 事故のことを] [$_{So}$ 彼から]/ [$_{So}$ 彼から] [$_{Th}$ 事故のことを] 聞いた.

(v) Though we strictly observe the "One-Instance-per-Clause" Principle, which requires that no two identical theta-roles occur as obligatory arguments within the same simple sentence, we will slightly loosen this constraint under the following three sets of circumstances. First, two identical theta-roles may appear in the same simple sentence, if one occurs as an obligatory argument, and the other as a semantic argument (i.e. adjunct), as illustrated in (109):

(109) a. [$_{Lo}$ In the classroom] John sat [$_{Lo}$ in the front row].
b. 小明 [$_{Lo}$ 在教室裏] 坐 [$_{Lo}$ 在最前面的一排].
c. 太郎は [$_{Lo}$ 教室の中で] [$_{Lo}$ 一番前の席に] 坐っている.

"Symmetric" predicates, which require semantically plural subjects (e.g. 'kiss; ({接/相})吻; キッス(を)する', 'meet; 見(面); 會う', 'consult; 商量; 相談する') or objects (e.g. 'mix; 混合; 混{じ/ぜ}る) and function either as transitive or intransitive verbs, will be assigned the theta-grid '[{Ag^Ag'/Go, Ag}]' or '[{Th^Th'/Th^Th', Ag}]' and yield surface sentences like (110) and (111):

(110) a. {[[$_{Ag}$ John] [$_{Ag'}$ and Mary]] kissed/ [$_{Ag}$ John] kissed [$_{Go}$ Mary]}.
b. {[[$_{Ag}$ 小明] [$_{Ag'}$ 跟小華]] 相吻了/ [$_{Ag}$ 小明] 吻了 [$_{Go}$ 小華].
c. {[[$_{Ag}$ 太郎と] [$_{Ag'}$ 花子] が]/ [$_{Ag}$ 太郎が] [$_{Go}$ 花子に]} キッスした.
(111) a. {[[$_{Th}$ Oil] [$_{Th'}$ and water]] won't mix/ You can't mix [$_{Th}$ oil]
[$_{Th'}$ {and/with} water]}.
b. {[[$_{Th}$ 油] [$_{Th'}$ 跟水]] 不能混合/ 你不能混合 [$_{Th}$ 油] [$_{Th'}$ 跟水]}.
c. [[$_{Th}$ 水と] [$_{Th'}$ 油] は]{ 混じらない/ 混ぜることが出來ない }.

Finally, certain predicate verbs (e.g. 'outrun; 跑得過/跑得比...快; ...より早く走る', 'outtalk; 說得過/說得比...{好/快}; ...より{上手に/早く}話す', 'outshoot; 射得過/射得比...準; ...より正確に射つ') that seem to require identical theta-roles as both subject and object in their semantic interpretation will be assigned the theta-grid '[Th, Th']' and yield a surface sentence like (112):

(112) a. [$_{Th}$ John] can always outrun [$_{Th'}$ Bill].
b. [$_{Th}$ 小明] 總能 { 跑得過 [$_{Th'}$ 小翔]/ [$_{Th'}$ 比小翔] 跑得快 }.
c. [$_{Th}$ 太郎] いつも [$_{Th'}$ 次郎より] 早く走る.

(vi) We also strictly observe the Theta Criterion, which requires that the relationship between arguments and theta-roles be one of one-to-one correspondence; namely, each argument is assigned one and only one theta-role, and each theta-role is assigned to one and only one argument. When a certain argument can be interpreted as playing more than one theta-role, however, we will indicate this lexical ambiguity in the theta-grid by the use of curly brackets and a comma (i.e. '{Xx, Yy}'[17]). Thus, the verbs 'roll; (翻)滾; 轉が(り落ち)る', for example, will be assigned the theta-grids '[{Ag, Th} (Ro)]; [{Ag, Th} (Ro)]; <{Ag, Th} (Ro)>'[18] and yield a sentence like (113), in which the subject NP 'John; 小明; 太郎' may receive the semantic interpretation of either (voluntary) Agent or (involuntary) Theme:

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[17] The use of curly brackets and a comma ('{Xx, Yy}') differs from the use of curly brackets and a slash ('{Xx/ Yy'}) while the former signifies that a certain argument may be interpreted as playing the theta-role 'Yy' as well as the theta-role 'Xx', the latter indicates an optional choice of either the theta-role 'Xx' or 'Yy', but not both.

(113) a. [$_{\text{Ag, Th}}$ John] rolled down the hill.
b. [$_{\text{Ag, Th}}$ 小明] 沿著 山坡 滾下來.
c. [$_{\text{Ag, Th}}$ 太郎は] 坂に 沿って 轉がり落ちた.

Similarly, the verbs 'buy; 買; 買う' and 'sell; 賣; 賣る' will be assigned the theta-roles '[Th (So) {Ag, Go}]; [Th (So) {Ag, Go}]; <Th (So) {Ag, Go}>' and '[Th (Go) {Ag, So}]; [Th (Go) {Ag, Go}]; <Th (So) {Ag, So}>', respectively, which will yield sentences like (114), where the subject NPs 'John; 小明; 太郎' receive the Goal as well as Agent interpretation, and (115), where the subject NPs 'Mary; 小華; 花子' receive the Source as well as Agent interpretation:

(114) a. [$_{\text{Ag, Go}}$ John] bought some used books from Mary.
b. [$_{\text{Ag, Go}}$ 小明] 從小華(那裏)買了一些舊書.
c. [$_{\text{Ag, Go}}$ 太郎が] 古本を 數冊 花子から 買った.
(115) a. [$_{\text{Ag, So}}$ Mary] sold some used books to John.
b. [$_{\text{Ag, So}}$ 小華] 賣了一些舊書給小明.
c. [$_{\text{Ag, So}}$ 花子が] 古本を 數冊 太郎に 賣った.

(vii) In order not only to optimize the number of theta-roles available in our analysis but also to simplify the selectional restrictions between theta-roles and adpositions, we have left unspecified the adposititions that co-occur with various theta-roles in unmarked cases, but specified in the theta-grids those co-occurring with various theta-roles in marked cases. Thus, the Source preposition 'from' in the theta-role '[Th (So) Ag]' for the English verb 'steal', or the Theme preposition 'of' in the theta-role '[So (Th) Ag]' for the English verb 'rob', will be left unspecified, yielding sentences such as (116a) and (117a)[19], while the marked selection of the Source preposition 'of' for the English verb 'ask', and the Theme preposition 'for' for the English verb 'beg', must be specified in their theta-grids as '[<Th, of So> Ag]' and '[So, for Th, Ag]', respectively, yielding sentences such as (118a) and (119a)[20]:

(116) a. The clerk stole [$_{\text{Th}}$ the money] [$_{\text{So}}$ from the cash register].
b. 那個店員 [$_{\text{So}}$ 從收銀機] 偷了 [$_{\text{Th}}$ 錢].
c. あの店員は [$_{\text{So}}$ レジから] [$_{\text{Th}}$ 金を] 盗んだ.
(117) a. The man robbed [$_{\text{So}}$ the bank] [$_{\text{Th}}$ of the money].
b. 那個男人 [$_{\text{So}}$ 從銀行(裏)] 搶了 [$_{\text{Th}}$ 錢].
c. あの男は [$_{\text{So}}$ 銀行から] [$_{\text{Th}}$ 金を] 奪った.
(118) a. I would like to ask {[$_{\text{Th}}$ a favor] [$_{\text{So}}$ of you]/ [$_{\text{So}}$ you] [$_{\text{Th}}$ a favor]}.
b. 我想請 [$_{\text{Go}}$ 你] 幫 [$_{\text{Th}}$ 個忙].
c. [$_{\text{Go}}$ 君に] [$_{\text{Th}}$ 助けを] 頼みたい (ことがある).
(119) a. I have come to beg [$_{\text{So}}$ you] [$_{\text{Th}}$ for help].
b. 我來 {[$_{\text{Go}}$ 向你] 請求}/ 請求 [$_{\text{Go}}$ 你(的)]} [$_{\text{Th}}$ 幫忙].

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18. 'Ro" stands for 'Route'. The verbs 'roll; (翻)滾; 轉が(り落と)す' have, in addition, the theta-grid '[Th (Ro) Ag]; [Th (Ro) Ag]; <Th (Ro) Ag>', yielding sentences such as 'John rolled the rock down the hill; 小明把石塊沿著山坡滾下去; 太郎は岩を坂に沿って轉が(り落と)した'.

19. The Chinese and Japanese verbs corresponding to the English verbs 'steal' and 'rob' are '偸; 盗む' and '搶; 奪う', respectively, both of which have the theta-grid '[Th (So) Ag]; <Th (So) Ag>', yielding sentences like (116b, c) and (117b, c).

20. The Chinese and Japanese verbs corresponding to the English verbs 'ask' and 'beg' are '請, (請)求' and '頼む, 求める', respectively, with the theta-grids '[Go, Th, Ag]' and '<Th, Go, Ag>'.

c. [Go 貴方に] [Th 助けを] 求めに 來ました.

(viii) For predicate verbs which appear in the form of idioms or phrases, we assign theta-grids to these idiomatic or phrasal verbs. Thus, the English verbs and verb phrases 'die, pass away, kick the bucket, yield up the ghost, pay the debt of nature, go to one's long account' are all assigned the theta-grid '[Be]', and so are the Chinese verbs and verb phrases '死, 翹辮子, 兩腳伸直, 穿木長衫' or the Japanese verbs and verb phrases '死ぬ, 他界する, 逝去する, あの世へ旅立つ, あの世の人となる, 閻魔に會う'. Similarly, English phrasal verbs such as 'give (birth/rise) to', 'look (up to/down)' and 'take... into (consideration/account)' are assigned, respectively, the theta-grids '[Go, So]', '[Th, Ex]' and '[Th, Ag]'.

(ix) The English expletives 'there' and 'it' appear in 'unaccusative' (including 'existential') sentences and 'impersonal' constructions, respectively, as non-referential and non-thematic subjects. For predicate verbs that may or must take pleonastic 'there' and 'it' as subjects, we will place these pleonastics as optional or obligatory external arguments in their theta-grids. Thus, English meteorological verbs such as 'rain, snow, hail, thunder' are assigned the theta-grid '[it]', yielding a sentence like (120a).[21]

(120) a. It is (raining/snowing/hailing/thundering).
b. (下(雨/雪/雹)/打雷) 了.
c. ((雨/雪/雹) が 降って/ 雷が 鳴って) いる.

English existential verbs (e.g. 'be, exist, live, remain') and unaccusative verbs (e.g. 'arrive, occur, emerge'), on the other hand, are assigned the theta-grids '[(Lo, Th <+def>/ Th <-def>, Lo, there)][22]' and '[(Th <+def>/ Th <-def> (there))]' respectively, yielding sentences like (121a) and (122a)[23].

(121) a. ([Th The book] is/ There is [Th a book]) on the desk.
b. ([Th (那本)書] 在桌子上/ 桌子上有 [Th (一本)書].
c. ([Th (あの) 本は] つくえの上に/ つくえの上に [Th 本が (一冊)]) 有る.
(122) a. ([Th The accident] arose/ [Th An accident] arose/ There arose [Th an accident]) from carelessness.
b. (([Th (那件)意外事故]/ [Th 有一件意外事故]) 因爲粗心大意而發生了/ 因爲粗心大意而發生了 [Th 一件意外事故]).
c. ([Th (あの)事故は] 不注意から/ 不注意から [Th 事故が(一件)]) 起った.

As for English "raising" verbs such as 'seem, appear, happen, chance', we will assign the theta-grid '[(Pd, it/ Pe, Th)][24]', yielding sentences (123a'). as well as

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21. The Chinese and Japanese verbs corresponding to the English verbs 'rain, snow, hail, thunder' are '下(雨/雪/雹), 打雷' and '((雨/雪/雹)が)降る, (雷が)鳴る', respectively, and are assigned the theta-grids '[ ]' and '<(雨/雪/雹/雷)>', yielding sentences like (120b) and (120c).

22. '<+def>' and '<-def>' stand, respectively, for '<definite>' and '<indefinite>'.

23. The Chinese and Japanese verbs corresponding to the English verbs 'be; arise' are '在, 有; 發生' and '有る; 起る', respectively, and are assigned the theta-grids '在 [Lo, Th <+def>], 有 [Th <-def>, Lo]; 發生 [(Th <+def>/ (有)Th (φ)]' and '有る <Lo, Th>; 起る [Th]', yielding sentences like (121b, c) and (122b, c).

24. This theta-grid indicates that sentences like (123a') are directly projected from the theta-grid in our analysis, rather than indirectly derived from the underlying sentence such as '[e seems [Pi John to be sick]' by moving the constituent subject 'John' into the matrix subject position. Since we are interested more in the "direct" realization of surface sentences than in the "proper" derivation of these sentences, this slight deviation of ours from the traditional analysis of raising constructions in the Government-and-Binding Theory may be excusable. Incidentally, verbs like

(123a)[25].

(123) a. It seems [$_{Pd}$ John is sick].
a′. [$_{Th}$ John] seems [$_{Pe}$ e to be sick].
b. 好像 [$_{Pd}$ 小明病了].
b′. 小明 好像 病了.
c. [$_{Pd}$ 太郎(が/は)病氣] らしい.
c′. 太郎(が/は)病氣らしい.

(x) There are a number of English verbs which are converted from nouns. Thus, denominal verbs such as ′bottle (wine), gut (a fish), knife (a person)′ have relevant nouns incorporated in their semantic interpretations, as paraphrased in ′put (wine) into a bottle, take out the guts of (a fish), stab (a person) with a knife′, and are assigned the theta-grids ′[Th, Ag], [So, Ag], [Th, Ag]′, yielding sentences (a) in (124) through (126):

(124) a. [$_{Ag}$ He] is bottling [$_{Th}$ the wine].
b. [$_{Ag}$ 他] 正 [$_{Th}$ 把葡萄酒] 裝(入/進)瓶子裏(面).
c. [$_{Ag}$ 彼は] [$_{Th}$ 葡萄酒を] 瓶(の中)に 詰めている.
(125) a. [$_{Ag}$ She] has already gutted [$_{So}$ the fish].
b. [$_{Ag}$ 她] 已經 ([$_{So}$ 從魚裏(面)] 取出 [$_{Th}$ 內臟]/ 取出 [$_{Th}$ [$_{So}$ 魚的] 內臟])了.
a. [$_{Ag}$ 彼女は] 既に ([$_{So}$ 魚の中から][$_{Th}$ はらわたを]/
[$_{Th}$ [$_{So}$ 魚の] はらわたを]) 取り除いた.
(126) a. [$_{Ag}$ She] knifed [Th him] in a rage.
b. [$_{Ag}$ 她] 在暴怒之下 (用刀子刺了 [$_{Th}$ 他]/ 刺了 [$_{Th}$ 他] 一刀).
c. [$_{Ag}$ 彼女は] 激怒の余り 刀で [Th 彼を] 刺した.

Note that the English verbs ′bottle, gut, knife′ correspond to ′裝(入/進)瓶子裏(面), (從...裏(面))取出內臟 (用刀子/刺...一刀)′ in Chinese and ′瓶(の中)に詰める, (...(の中)から)はらわたを取り除く, 刀で刺す′ in Japanese, each of which is assigned exactly the same theta-grid assigned to the corresponding English verb. Note also that the incorporated nouns ′bottle, gut(s), knife′ in the English predicate verbs appear overtly as ′瓶子, 內臟, 刀子; 瓶, はらわた, 刀′ in the corresponding Chinese and Japanese predicate verbs, playing the semantic roles of Goal, Theme and Instrument, respectively.

(xi) In addition to verbs, adjectives can also be used as predicates and assigned proper theta-grids so as to project into sentences. English adjectives ′afraid′ and ′fond′, for example, will be assigned the theta-grids ′[((Th/Pd)) Ex]′ and ′[Th, Ex]′, yielding sentences (127a) and (128a). Similarly, Chinese adjectives ′怕; 喜歡′ and Japanese adjectives ′可怕い; 好き[26]′ are assigned the theta-grids ′[((Th/Pd)) Ex]; [(Th/Pd/Pe) Ex]′ and ′[(Th/Peの) Ex]′, respectively, yielding sentences like (127b, c) and (128b, c). Compare:

′(non-existential) be; 是 (NP), (是) (AP); だ′ and ′become; (成爲 (NP)/ 變得 (AP)); ((NP) に/ (AP) く)なる′, which may take NPs as well as APs as complements, will be assigned the theta-grid ′[At, Th]′, with ′At′ standing for ′Attribute′ and yielding sentences such as ′He (is/ became) (a doctor/ rich); 他 ([是/成爲) 個醫生/(很/變得很) 有錢); 彼は (醫者/金持ち) (だ/になった)′.

[25] Note that the English verb ′seem′ corresponds to a sentential adverb ′好像′ in Chinese and an adjectival suffix ′らしい′ in Japanese, which are assigned the theta-grids ′[__Pd]′ and ′[Pd__]′, respectively, yielding sentences like (123b, c).

[26] More precisely, while ′可怕い′ falls under the traditional category of adjective, ′好き′ falls under what we call ″adjectival noun″. Moreover, both ′可怕い′ and ′好き′ are analyzed as ″transitive″ adjectives which take ′Yy は′ as external argument or subject, and ′Xx が′ as internal argument or object, as illustrated in (127b) and (128b).

(127) a. [Ex I] am afraid ({[Th of our teacher]/ [Pd that our teacher will punish us]}).
b. [Ex 我] 很怕 ({[Th 我們的老師]/ [Pd 我們的老師會處罰我們]}).
c. [Ex 我は] ({[Th 先生が]/ [Pd 先生に 叱られるのが]} 可怕い.
(128) a. [Ex I] am fond [Th of { music/singing songs }].
b. [Ex 我] 喜歡 {[Th 音樂]/ [Pd 大家一起唱歌]/ [Pe 一起唱歌]}.
c. [Ex 我は] {[Th 音樂が]/ [Pe (皆で)歌を歌うのが]} 好きだ.

Agentive nouns (e.g. 'teacher, student, author, editor; 老師, 學生, 作者, 編者; 先生, 生徒, 作家, 編集者'), deverbal action nouns (e.g. 'destruction, withdrawal, analysis, description; 摧毀, 撤退, 分析, 描寫; 取りこわし, 撤退, 分析, 描寫') and locative nouns (e.g. 'top, bottom, front, back; 上面, 下面, 前面, 後面; 上, 下, 前, 後') may optionally take Theme and Location, respectively, as complements. Thus, these nouns may be assigned the theta-grids '[(Th)]' or '[(Lo)]', yielding such expressions as 'the teacher [Th of English]; [Th 英語的] 老師; [Th 英語の] 先生', 'the destruction [Th of the old house]; [Th 舊屋的] 摧毀; [Th 古い家の] 取りこわし' and 'the top [Lo of the desk]; [Lo 桌子的] 上面; [Lo つくえの] 上'.

(xii) In addition to verbs, adjectives and nouns, prepositions (including postpositions in Japanese), adverbial particles and conjunctions are assigned theta-grids which will project into prepositional (or propositional) phrases and subordinate clauses. Locative prepositions and postpositions like '{at/in/on/above/under/below/beside/before/after}...; 在...{φ/裏(面)/上(面)/下(面)/旁(邊)/前(面)/後(面)}; ...{φ/の{中/上/下/横/前/後}}に', for example, may be assigned the theta-grid '[Lo]'; temporal prepositions and postpositions like '{at/on/in/during/ before/after/till}...; {在...{(的時候)/以前/以後}/到...};...{に/中/(以)前/(以)後/迄}', the theta-grid '[Ti]'; instrumental prepositions and postpositions like '{with/by/by means of}...; {用/坐/搭/藉}...; ...で', the theta-grid '[In]'; and so on. English adverbial particles (e.g. 'up, down, in, out, on, off, over, away') differ from their homophonous prepositions in that while the latter are "transitive" and thus must take NPs as complements, the former are "intransitive prepositions" which cannot take complements and are assigned the theta-grid '[ ]'[27]. English adverbial particles are generally matched in Chinese with locative and deictic complements (e.g. '{{上/下/進/出/過}{來/去}/開}'), and in Japanese with complement stems in compound verbs (e.g. '{上る/下りる/込む/出す/去る}'). Subordinate conjunctions (e.g. '{when/while/before/after/till/if/ unless/because}; {...{的時候/以前/以後}/{到/如果/除非/因爲}...}; ...{時/間/前/後/迄/V-(r)u と/V-Ta ら/V-(r)e ば/なければ/から/ので}[28]), on the other hand, differ from prepositions and postpositions in that while the latter take NPs or PPs as complements, the former take clauses (i.e. IPs or TPs) as complements and are assigned theta-grids such as '[Pd, Ti]', '[Pd, Co]' and '[Pd, Ca]', with 'Ti', 'Co' and 'Ca' standing for "temporal clause", "conditional clause" and "causal clause". As for coordinate conjunctions, they may also be analyzed as semantic predicates taking two or more than two arguments that are in principle identical in terms of syntactic category and phrasal status (i.e. word (X), semi-phrase (X') and phrase (XP)). Thus, we assign coordinate conjunctions the theta-grid '[Xx*]'[29], which will yield such coordinate constructions as 'John {and/,} Bill and Dick; 小明{和/,}小張和小剛; 太郎{と/,}次郎と三郎', 'either to go to the office or to stay at home; 或者去上班或者留在家; 出勤するかそれとも家に殘るか' and 'not only pretty but also gentle and intelligent; 不但漂亮而且溫柔又賢慧; 只だ綺麗だけではなく優しくて賢い'.

(xiii) The positions of adverbs or adverbials that occur in VPs, IPs (i.e. Ss) or CPs (i.e. S's) can also be indicated in the form of theta-grid. English "non-ly" adverbs (e.g. 'before, behind, afterward, inside, outside, upstairs, downstairs, around, along, abroad, here, there; hard, early, late, (stay) long, (cut) short, fast, (drive)

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27. Or, alternatively, they may be assigned the theta-grid '[φ]'. Certain adverbial particles, however, may take PPs as adjuncts, as illustrated in 'John came out from behind the tree.'

28. For a more detailed discussion of Japanese conjunctions, see Tang (1993).

29. The 'Xx' represents a variable in terms of both syntactic category and phrasal status, while the superscript star '*' stands for any number that is equal to, or larger than, two.

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slow, (run) deep'), for example, may only appear as rightward adjuncts in VPs and are assigned the theta-grid '[V'__]', while preverbal adverbs (e.g. 'hardly, scarcely, simply, merely, just, not, never'[30]) and degree adverbs (e.g. 'deeply, badly, entirely (agree), fully (understand); terribly (sorry), perfectly (natural), utterly (wrong)') may only appear as leftward adjuncts in VPs or APs and are assigned the theta-grid '[__(V'/A')]'. As for "-ly" manner adverbs (e.g. 'slowly, rapidly, carefully, cautiously, diligently, happily, sadly'), which may appear as either rightward or leftward adjuncts in VPs, and sentential adverbs (including style adverbs (e.g. '(to speak) frankly, honestly (speaking)'), viewpoint adverbs (e.g. 'theoretically, linguistically, technically'), modality adverbs (e.g. 'possibly, perhaps, certainly, undoubtedly') and evaluation adverbs (e.g. 'surprisingly, regrettably')), which may appear sentence-initially or sentence-finally, are assigned the theta-grids '[__V'__]' and '[__C'__]', respectively[31].

5. The Projection of Theta-grids and its Constraints

In projecting the contents of theta-grids into surface sentences, we must observe the following principles or conditions:

(i) The Projection Principle requires that the argument structure and thematic property of the predicate verb, adjective and noun project to all the three levels of syntactic representation: D-structure, S-structure and Logical Form (LF). In our approach, however, the only relevant level of syntactic representation is surface structure, and the theta-grids of predicate verbs, adjectives and nouns will project directly into surface sentences[32].

(ii) The Theta Criterion requires that each argument be assigned one and only theta-role, and each theta-role be assigned to one and only one argument. This will guarantee not only that all obligatory arguments are present in sentences, but also that no redundant or illegitimate elements appear in sentences. Optionality of certain arguments, on the other hand, is specified as such by the use of parentheses in the theta-grid.

(iii) The Canonical Structure Realization Principle states that each theta-role is mapped on to its canonical syntactic construction. Agent, Experiencer and Benefactive, for example, are typically realized as human or animate NPs; Theme, as concrete or abstract NPs; Quantity, as QP; Goal, Source, Instrument, Location and Time, as PPs; and Proposition, as various types of clauses as specified in theta-grids. Furthermore, the selectional restriction between the adposition and the NP in each theta-role that is realized as a PP is predicted or handled by lexical redundancy rules (e.g. 'P --> to/___NP]$_{Go}$') in unmarked cases and explicitly specified in the theta-grid in marked cases.

(iv) The X-bar Convention defines the well-formedness condition on the hierarchical structure of, and the dominance relation among, constituents of phrasal constructions, as stated in (129); namely, all syntactic constructions are endocentric in structure, binary in branching, and can be recursively generated or licensed if necessary:

(129) a. Specifier Rule: XP --> XP, X'
b. Adjunct Rule: X' --> XP, X' (recursive)
c. Complement Rule: X' --> XP, X

Basically, (129a) states that any phrasal category or maximal projection 'XP' consists of a "semi-phrasal" or intermediate projection 'X'' and a specifier, which can be of any maximal projection (including null); (129b) states that the intermediate projection 'X'' in turn consists of another intermediate projection 'X'' and an adjunct, which can be of any maximal projection and, furthermore, can be more than one in number since the rule is recursively applicable; and (129c) states that the intermediate projection 'X'' also consists of the head word 'X' and a complement 'XP' [33]. 'X' represents a variable that ranges over lexical categories such as N(oun), V(erb), A(djective), P(reposition), Ad(verb) and functional categories such as C(omplementizer), I(nflection), D(eterminer) and Q(uantifier)[34]. For ease of exposition, we will simply assume that, in the surface structure, subject NPs of sentences appear in the specifier position of IPs; object NPs and complement PPs (or NPs) of predicate verbs (or adjectives) occur in the complement and the adjunct positions of VPs[35], respectively; and various adverbials are placed in the adjunct positions of all kinds of XP. Similarly, object NPs, PPs or IPs of adpositions (including prepositions, postpositions and subordinate conjunctions) appear as complements of these adpositions. Within NPs, however, complement PPs and appositional clauses occur as complements of the head noun, while relative clauses and other adjectivals appear as adjuncts[36].

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[30] We will not discuss here whether the negative 'not' should head its own projection.

[31] For a much more detailed discussion of English adverbs and adverbials appearing in various X-bar structures, see Tang (1990b).

[32] Thus, the Projection Principle may be replaced by or subsumed under the Full Interpretation Principle (FI), which requires that every element of PF and LF must receive an appropriate interpretation or be properly licensed.

(v) While the hierarchical structure of the constituents forming various XPs is defined by the X-bar Convention, the linear order of these constituents is determined by the following conditions and parameters:

(130) Case Filter
Phonologically realized NPs must be assigned Case[37].

(131) Case-Assignment Parameter
a. English NPs are assigned accusative Case and oblique Case by transitive verbs and prepositions, respectively, from left to right[38].
b. Chinese NPs are assigned accusative Case and oblique Case by transitive verbs (and adjectives) and prepositions, respectively, from left to right.
c. Japanese NPs are assigned Case by postpositions from right to left.

(132) Adjacency Condition
No constituent may intervene between the Case-assigner (e.g. transitive verbs, transitive adjectives, prepositions, postpositions) and the Case-assignee (i.e. NPs).

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33. There are several different versions of X-bar convention. Some versions allow XP-adjunction in the phrase structure (i.e. 'XP --> XP, XP', as instantiated in Larson's (1988) VP-shell analysis), while others allow functional categories to project to two-bar levels (i.e. 'XP') but prohibit lexical categories from doing so (e.g. Fuki's (1986, 1988) relativized X-bar theory).

34. Note that while lexical categories are generally provided with argument structures, functional categories do not seem to have argument structures.

35. The VP-internal Subject Hypothesis assumes that the subject NP originates in the specifier position of the VP in D-structure but moves to the specifier position of the IP in S-structure to acquire nominative Case. Larson (1988), on the other hand, proposes that the subject NP, the object NP and the complement PP (or NP) appear in the specifier position of the VP-shell, the specifier position of the VP, and the complement position of the VP, respectively, in D-structure, with subsequent movement of the subject NP to the specifier position of the IP to receive nominative Case and that of the predicate verb to the head position of the VP-shell to assign accusative Case to the object NP.

36. For X-bar structure analysis of various phrasal categories in English and Chinese, see Tang (1989b, 1989c, 1989d, 1990b, 1990c, 1990d).

37. There are also linguists who claim that, in addition to NPs, IPs (i.e. Ss) are assigned Case by complementizers and subordinate conjunctions.

38. We will assume that subject NPs in English and Chinese are assigned nominative Case under co-indexation with the head I of IP.

(133) Argument-Placement Parameter[39]

a. English predicate verbs and adjectives place their internal arguments (i. e. objects and complements) and semantic arguments (i. e. adjuncts or adverbials) on their right, and external arguments (i. e. subjects) on their left.

b. Chinese predicate verbs, adjectives and nouns[40] place their internal arguments on their right, and external and semantic arguments on their left.

C. Japanese predicate verbs and adjectives place all kinds of argument on their left.

(134) Modifier-Placement Parameter[41]

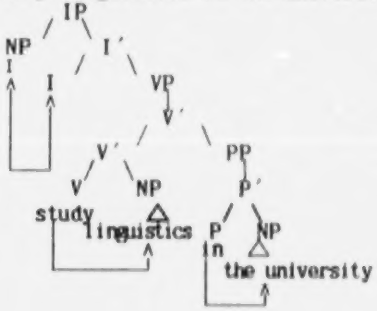
a. English non-single-word modifiers of nouns (including "bare-NP" adverbs, prepositional phrases, infinitival phrases, participial phrases, appositional clauses, relative clauses), adjectives and adverbs (e. g. infinitival phrases and comparative phrases) appear to the right of the head noun, adjective and adverb, while single-word modifiers (e. g. determiners, quantifiers[42], adjectives, adverbs[43], participles and nouns) appear to the left.

b. Chinese modifiers of nouns, adjectives and adverbs all appear to the left of the head noun, adjective and adverb[44].

c. Japanese modifiers of nouns, adjectives and adverbs all appear to the left of the head noun, adjective and adverb.

The X-bar Convention (129), coupled with the conditions and parameters listed in (130) through (134), will generate or license the hierarchical structure of constituents and the linear order among them, as illustrated in the English, Chinese and Japanese sentences below. Compare:

(135) a. I study linguistics in the university.



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39. This is a rather stipulative variation of the Head Parameter (i. e. a choice between "Head-Initial" and "Head-Final) or the θ-assignment or θ-marking Directionality Parameter (i. e. choice between "From-Left-to-Right" or "From-Right-to-Left").

40. Certain predicate nouns may occur without predicate verbs in Chinese, as illustrated in '今天星期五', '我臺灣人' and '糖一斤幾塊錢?'. These predicate nouns are attributive in nature and do not seem to require Case.

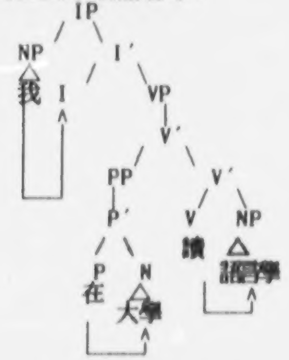
41. This is again a different version of the Head Parameter.

42. Expressions like 'plenty of, lots of, a great many, a good deal of, a large number of' are treated as lexicalized quantifiers, which are equivalent in lexical status to single-word quantifiers like 'many, much, half.'

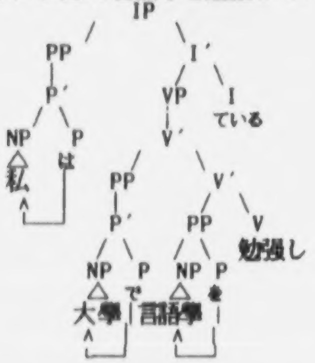
43. Adjectives may be modified by degree adverbs (e. g. 'very, so, too, rather') and quantifiers (e. g. 'ten years (old)'). Since degree adverbs (including comparative phrases) and quantifiers are mutually exclusive, they may be generalized into a single category.

44. Descriptive and resultative complements, along with a few degree adverbs (e. g. '... (極了/得很/得不得了)'), however, follow the head adjective.

b. 我在大學讀語言學.



c. 私は大學で言語學を勉強している.



In the English sentence (135a), both the object NP 'linguistics' and the locative adjunct PP 'in the university' appear to the right of the predicate verb 'study', as defined in the Argument-Placement Parameter (133a). Moreover, the NPs 'liguistics' and 'the university' receive accusative and oblique Case, respectively, from the preceding transitive verb 'study' and preposition 'in', while the subject NP 'I' receives nominative Case under co-indexation with the inflectional head I, as defined in the Case-Assignment Parameter (131a), thus satisfying the Case Filter (130). Next, in the Chinese sentence (135b) the object NP '語言學' appears to the right, and the locative adjunct PP '在大學' to the left, of the predicate verb '讀', as defined in (133b). Like English NPs, the Chinese NPs '語言學' and '大學' receive accusative and oblique Case, respectively, from the preceding transitive verb '讀' and preposition '在', whereas the subject NP '我' receives nominative Case under co-indexation with the inflectional head I, as defined in (131b), thus satisfying (130). Finally, in the Japanese sentence (135c) the subject NP '私', the object NP '言語學' and the locative adjunct PP '大學で' all occur to the left of the predicate verb '勉強する', as defined in (133c), but unlike English and Chinese NPs, all the Japanese NPs '私', '大學' and '言語學' receive Case from the following topic-marker postposition 'は', locative postposition 'で' and object-marker postposition 'を', respectively, as defined in (131c), thus satisfying (130). As Cases in Japanese are assigned by propositions and have nothing to do with predicate verbs, "scrambling" of arguments is freely permitted in Japanese. In English and Chinese, by contrast, the word order is rather rigidly fixed. Compare:

(136) a. He studied English diligently at the library yesterday[45].

b. Yesterday he studied English diligently at the library.

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[45] 'Yesterday', '昨天' and '昨日' are adverbs in nature and do not seem to require Case.

c. Yesterday at the library he studied English diligently.

(137) a. 他昨天[45] 在圖書館裏認眞地讀書.
b. 昨天 他在圖書館裏認眞地讀書.
c. 昨天 在圖書館裏 他認眞地讀書.

(138) a. 彼は 昨日[45] 圖書館で 英語を 熱心に 勉强した.
b. 昨日 彼は 圖書館で 英語を 熱心に 勉强した.
c. 昨日 圖書館で 彼は 英語を 熱心に 勉强した.
d. 昨日 圖書館で 彼は 熱心に 英語を 勉强した.
e. 彼は 圖書館で 昨日 熱心に 英語を 勉强した.
f. 彼は 昨日 英語を 圖書館で 熱心に 勉强した.

While English and Chinese allow only temporal and locative adverbials to occur sentence-initially as thematic adverbials, as exemplified in (136) and (137), all the phrasal constructions (i.e. '彼は', '昨日', '圖書館で', '熱心に'[46], '英語を') in the Japanese sentence (138) can be freely scrambled and appear in different word orders.

(vi) We have shown how the theta-grids of predicate verbs and adjectives can be projected into surface sentences without recourse to movement transformations. There are certain language-specific changes in word order, however, that must be handled by the rule of "Move α". English has, for example, Auxiliary Preposing, which moves an auxiliary verb occurring in the head position of VP or IP to the head position of CP ((139a)); WH-Fronting, which moves a wh-phrase in a direct or indirect question to the specifier position of CP ((139b)); Extraposition from NP, which moves an appositional or relative clause and adjoins it to the right periphery of VP ((139c)); Heavy NP Shift, which moves a clausal object and adjoins it to the right periphery of VP ((139d)); and Topicalization, which moves a topicalized phrase to the specifier position of CP ((139e)):

(139) a. [$_{CP}$ [$_{IP}$ John [$_{I}$ will] do it]]. --> [$_{CP}$ [$_{C}$ Will] [$_{IP}$ John t do it]]?
b. [$_{CP}$ I don't know [$_{CP}$ John will do what]]. -->
[$_{CP}$ I don't know [$_{CP}$ what [$_{IP}$ John will do t]]].
c. [$_{CP}$ [$_{NP}$ The rumor [$_{CP}$ that Mary has eloped with John]] is going about in the village]]. -->
[$_{CP}$ [$_{NP}$ The rumor t] is [$_{VP}$ [$_{VP}$ going about in the village] that Mary has eloped with John]].
d. [$_{CP}$ You can [$_{VP}$ say [$_{CP}$ exactly what you think] to him]]. -->
[$_{CP}$ You can [$_{VP}$ [$_{VP}$ say t to him] exactly what you think]].
e. [$_{CP}$ [$_{IP}$ I am not fond of [$_{NP}$ his face]]; [$_{CP}$ [$_{IP}$ I despise [$_{NP}$ his character]]] -->
[$_{CP}$ [$_{NP}$ his face] [$_{IP}$ I am not fond of t]]; [$_{CP}$ [$_{NP}$ his character]
[$_{IP}$ I despise t]].

Chinese, on the other hand, has Object Preposing, which moves the object NP to the left of a transitive verb or adjective and assigns it oblique Case with the preposition '把' ((140a)) or '對' ((140b)), and Topicalization, which moves a topicalized phrase and adjoins it to IP ((140c)):

(140) a. [$_{CP}$ 我 [$_{VP}$ 要 [$_{VP}$ 看完 [$_{NP}$ 書]]]. --> [$_{CP}$ 我 [$_{VP}$ 要 [$_{VP}$ [$_{PP}$ 把書] 看完 t]].
b. [$_{CP}$ 你 [$_{VP}$ 很了解 [$_{NP}$ 他]]]. --> [$_{CP}$ 你 [$_{VP}$ [$_{PP}$ 對他] [$_{VP}$ 很了解 t]].
c. [$_{CP}$ [$_{IP}$ 我不喜歡 [$_{NP}$ 他的面孔]]], [$_{CP}$ [$_{IP}$ 我瞧不起 [$_{NP}$ 他的爲人]]] -->
[$_{CP}$ [$_{IP}$ [$_{NP}$ 他的面孔], [$_{IP}$ 我不喜歡 t]]], [$_{CP}$ [$_{IP}$ [$_{NP}$ 他的爲人],
[$_{IP}$ 我瞧不起 t]]]

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[46] The 'に' following the adjectival noun '熱心に' may be analyzed either as an adverbial suffix or as a postposition functioning like the English preposition 'in' in such expressions as 'in earnest' and 'in peace'.

As for Japanese, almost all word-order changes can be accounted for by the rule of "scrambling", as discussed in (138).

6. Conclusion: Implications for Contrastive Analysis, Language Typology and Machine Translation

Since not only argument structure and thematic properties but also syntactic idiosyncracies of predicate verbs and adjectives are explicitly and economically specified in the form of theta-grids, and are projected into surface sentences in quite a straightforward manner, our approach facilitates comparison between individual languages not only in terms of lexical entries, but also in terms of surface word order. Corresponding "verbs of trading" in English, Chinese and Japanese, for example, can be compared with regard to their theta-grids and surface realizations, as illustrated in (141) through (145):

(141) a. 'spend': vt. [Qc (on Th) Ag]
[[$_{Ag/NP}$ John] spent [$_{Qc/NP}$ fifty dollars] ([$_{Th/PP}$ on the book])].
b. '花(費)': vt. [Qc (爲了 Th) Ag]
[[$_{Ag/NP}$ 小明] ([$_{Th/PP}$ 爲了 這本書]) 花了 [$_{Qc/NP}$ 五十塊錢]].
c. '使う': vt. <Qc (Th (のため)に) Ag>
[[$_{Ag/PP}$ 太郎は], ([$_{Th/PP}$ この本の(ため)に]) [$_{Qc/NP}$ 五十円][47] 使った].
(142) a. 'pay': vt. [<Qc (Go)> (for Th) {Ag, So}]
[[$_{Ag/NP}$ John] paid {[$_{Qc/NP}$ fifty dollars] [$_{Go/PP}$ to Mary]/
[$_{Go/NP}$ Mary] [$_{Qc/NP}$ fifty dollars]} ([$_{Th/PP}$ for the book])].
b. '付': vt. [<Qc (Go)> (爲了Th) {Ag, So}]
[[$_{Ag/NP}$ 小明] [$_{Th/PP}$ (爲了這本書)] 付了 {[$_{Qc/NP}$ 五十塊錢] ([$_{Go/PP}$ 給小華])/
[$_{Go/NP}$ 小華] [$_{Qc/NP}$ 五十塊錢]}].
c. '拂う': vt. <(Qc) (Th (のため)に) (Go) {Ag, So}>
[[$_{Ag/PP}$ 太郎は] ([$_{Th/PP}$ この本のために]) ([$_{Go/NP}$ 花子に]) [$_{Qc/NP}$ 五十円] 拂った].
(143) a. 'buy': vt. [Th (So) (Qc) {Ag, So}]
[[$_{Ag/NP}$ John] bought [$_{Th/NP}$ the book] ([$_{So/PP}$ from Mary])
([$_{Qc/PP}$ for fifty dollars])].
b. '買': vt. [Th (以 Qc) (So) {Ag, Go}]
[[$_{Ag/NP}$ 小明] ([$_{Qc/PP}$ 以五十塊錢]) ([$_{So/PP}$ 從小華]) 買了 [$_{Th/NP}$ 這本書]].
c. '買う': vt. <Th (Qc) (So) {Ag, Go}>
[[$_{Ag/PP}$ 太郎が] ([$_{Qc/PP}$ 五十円で]) ([$_{So/PP}$ 花子から]) [$_{Th/PP}$ この本を]
買った].
(144) a. 'sell': vt. [<Th (Go)> (Qc) {Ag, So}]
[[$_{Ag/NP}$ Mary] sold {[$_{Th/PP}$ the book] ([$_{Go/PP}$ to John])/
[$_{Go/NP}$ John] [$_{Th/NP}$ the book]} ([$_{Qc/PP}$ for fifty dollars])].
b. '賣': vt. [Th (Go) (以 Qc) {Ag, So}]
[[$_{Ag/NP}$ 小華] ([$_{Qc/PP}$ 以五十塊錢]) 賣了 [$_{Th/PP}$ 這本書] ([$_{Go/PP}$ 給小明])].
c. '賣る': vt. <Th (Qc) (Go) {Ag, So}>
[[$_{Ag/PP}$ 花子が] ([$_{Qc/PP}$ 五十円で]) ([$_{Go/PP}$ 太郎に]) [$_{Th/PP}$ この本を]
賣った].
(145) a. 'cost': vt. [(So) Qc, Th]
[[$_{Ag/NP}$ The book] cost ([$_{So/NP}$ Mary]) [$_{Qc/NP}$ fifty dollars]].
b. '花': vt. [(So) Qc, Th]
[[$_{Th/NP}$ 這本書] 花了 ([$_{So/NP}$ 小華]) [$_{Qc/NP}$ 五十塊錢]].
c. 'かかる': vi. [Qc, Th][48]
[[$_{Th/PP}$ この本は] [$_{Th/NP}$ 五十円] かかった].

Likewise, "ditransitive" verbs ((146) through (150)), verbs with Locative as

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[47] Note that while an object NP requires the presence of 'を' (e.g. 'たくさんお金を使う'), a quantifier phrase '五十円' dispenses with it.

[48] Note that parentheses, rather than angle brackets, are used for this intransitive verb, indicating that no permutation in the surface word order is permitted between the two arguments specified in the theta-grid.

"transposed" subject ((151)), "unaccusative" verbs ((152)), "ergative" verbs ((153)), "meteorological" verbs ((154)), "raising" verbs ((155)) and "control" verbs ((156) through (158)) can be compared in a similar fashion, as illustrated below:

(146) a. 'forgive': vt. [Be (Th) Ag]
[Please forgive [$_{Be/NP}$ us] ([$_{Th/NP}$ our trespasses])].
b. '原諒': vt. [Be(的Th) Ag]
[請原諒 [$_{Be/NP}$ 我們(的 [$_{Th/NP}$ 罪過])]].
c. '許す': vt. <BeのTh, Ag>
[なにとぞ [$_{PP}$ [$_{Be/PP}$ 私達の] [$_{Th/NP}$ 罪] を] 許したまえ].
(147) a. 'envy': vt. [Be (Ca) Ex]
[[$_{Ex/NP}$ John] envied [$_{Be/NP}$ Bill] [$_{Ca/NP}$ his good luck])].
b. '嫉妬': vt. [Be (的Ca) Ex]
[[$_{Ex/NP}$ 小明] {嫉妬 [$_{Be/NP}$ 小明的 [$_{Ca/NP}$ 好運氣]]/
[$_{Ca/PP}$ 因爲小强的運氣好] 而嫉妬 [$_{Be/NP}$ 他]}].
c. '羨む, 妬む': vt. <BeのCa, Ex>
[[$_{Ex/PP}$ 太郎は] [$_{PP}$ [$_{Be/PP}$ 次郎の] [$_{Ca/NP}$ 幸運] を] 羨んだ].
(148) a. 'give': vt. [<Th, Go> {Ag, So}]
[[$_{Ag/NP}$ John] gave {[$_{Th/NP}$ a present] [$_{Go/NP}$ to Mary]/
[$_{Go/NP}$ Mary] [$_{Th/NP}$ a present]}].
b. '給': vt. [Go, Th {Ag, So}]
[[$_{Ag/NP}$ 小明] 給了 [$_{Go/NP}$ 小華] [$_{Th/NP}$ 一件禮物]][49].
c. '上げる': vt. <Th, Go {Ag, So}>
[[$_{Ag/NP}$ 太郎が] [$_{Go/PP}$ 花子に] [$_{Th/PP}$ プレゼントを] 上げた[50]].
(149) a. 'send': vt. [<Th, Go> {Ag, So}]
[[$_{Ag/NP}$ John] will send {[$_{Th/NP}$ some cookies] [$_{Go/PP}$ to Mary]/ [$_{Go/NP}$ Mary]
[$_{Th/NP}$ some cookies]}].
b. '送': vt. [<Th, (給)Go> {Ag, So}]
[[$_{Ag/NP}$ 小明] 會送 {[$_{Th/NP}$ 一些餅乾] [$_{Go/PP}$ 給小華]/ [$_{Go/PP/NP}$ (給)小華]
[$_{Th/NP}$ 一些餅乾]}].
c. '送る': vt. <Th, Go {Ag, So}>
[[$_{Ag/PP}$ 太郎が] [$_{Go/PP}$ 花子に] [$_{Th/PP}$ ビスケットを] 送った].
(150) a. 'introduce': vt. <Th, Go {Ag, So}>
[[$_{Ag/NP}$ John] introduced [$_{Th/NP}$ Mary] [$_{Go/PP}$ to Bill]].
b. '介紹': vt. [Th, Go, Ag]
[[$_{Ag/NP}$ 小明] 介紹 [$_{Th/NP}$ 小華] [$_{Go/PP}$ 給小剛]].
c. '紹介する': vt. <Th, Go, Ag>
[[$_{Ag/PP}$ 太郎が] [$_{Go/PP}$ 次郎に] [$_{Th/PP}$ 花子を] 紹介した].
(151) a. 'swarm': vi. <Th, Go, Ag>
[[$_{Lo/NP}$ The garden] is swarming [$_{Th/PP}$ with bees]];
[[$_{Th/NP}$ Bees] are swarming [$_{Lo/PP}$ in the garden]].
b. '充滿': vt. [Th, Lo]
[[$_{Lo/NP}$ 院子裏] 充滿了 [$_{Th/NP}$ 蜜蜂]].
c. '羣がる': vi. <Lo, Th>
[[$_{Th/PP}$ 蜂が] [$_{Lo/PP}$ 庭に] 羣がっている].

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49. For speakers who accept '小明給了一件禮物給小華' as well-formed, the theta-grid will be '[<Th, Go> {Ag, So}]'.

50. Japanese ditransitive verbs have a rather complicated system of deixis, which can also be incorporated in the theta-grid (e.g. '上げる (vt. <Th, Go {Ag, So} <-I>), 差し上げる (vt. <Th, Go {Ag, So} <-I, +H>>), くれる (vt. <Th, Go <+I> {Ag, So} <-H>>), 下さる (vt. <Th, Go <+I>, {Ag, So} <+H>>), 貰う (vt. <Th, So <-I, -H>, {Ag, Go}>, いただく (vt. <Th, So <-I, +H> {Ag, Go}>), やる (vt. <Th, Go <-I, -H>, {Ag, So}>), くれてやる (vt. <Th, Go <-I, -H>, {Ag, Go}>), where '+I', '-I', '+H', '-H' stand for 'first-person', 'non-first-person (i.e. second and third persons)', ' honorific (or superior)' and 'non-honorific (or inferior)', respectively. For a more detailed discussion of Japanese deixis, see Tang (1993).

(152) a. 'arrive': v.[51] [Th (there)]
[[$_{Th/NP}$ A guest] arrived yesterday];
[[There] arrived [$_{Th/NP}$ a guest] yesterday].
b. '到, 來': v. [(有)Th (Φ)]
[[$_{Th/NP}$ 有一位客人] 昨天 {到/來} 了]; [昨天 {到/來} 了 [$_{Th/NP}$ 一位客人]].
c. '着く, 到着する'; vi. <Th>
[昨日 [$_{Th/PP}$ お客さんが] 一人 {着いた/到着した }].
(153) a. 'open': v(t).[52] [Th (Ag)]
[[$_{Ag/NP}$ John] opened [$_{Th/NP}$ the door]];
[[$_{Th/NP}$ The door] opened (automatically)].
b. '(打開)': v(t). [Th (Ag)]
[[$_{Ag/NP}$ 小明] 打開了 [$_{Th/NP}$ 門]]; [[$_{Th/NP}$ 門] (自動地) 打開了].
c. '開く': v(t). <Th (Ag)>
[[$_{Ag/PP}$ 太郎が] [$_{Th/PP}$ 戸を] 開いた]; [[$_{Th/PP}$ 戸が] (自動的に) 開いた].
(154) a. 'rain': vi. [it]
[[It] is still raining].
b. '下': v. [雨 (Φ)]
[[雨] 還在下]; [還在下 [雨]].
c. '降る': vi. <雨>
[[雨は] まだ降っている].
(155) a. 'happen': vi. [{Pd, it/Pe, Th}]
[[It] happened [$_{Pd/CP}$ that she was at home]];
[[$_{Th/NP}$ She] happened [$_{Pe/CP}$ PRO to be at home]].
b. '湊巧': ad. [_C']
[$_{CP}$ { 湊巧 [$_{Th/NP}$ 她]/ [$_{Th/NP}$ 她] 湊巧 }在家].
c. '偶然': ad. [_C']
[$_{CP}$ { 偶然 [$_{Th/PP}$ 彼女は]/ [$_{Th/PP}$ 彼女は] 偶然 } 家に居た].
(156) a. 'remember': vt. [{Pe, Ag/{Pe/Pg/Pd} Ex}]
[[Remember [$_{Pe/CP}$ PRO to turn off the light]];
[[$_{Ex/NP}$ I remember {[$_{Pe/CP}$ PRO seeing him once]/ [$_{Pg/IP}$ him saying that]/ [$_{Pd/CP}$ you went to school with him]}].
b. '記得'(要)': vt. [{Pe {Ag/Ex}/Pd, Ex}]
[記得 [$_{Pe/CP}$ PRO 要關燈]];
[[$_{Ex/NP}$ 我] 記得 [$_{Pe/CP}$ PRO 見過他一次]];
[[$_{Ex/NP}$ 我] 記得 [$_{Pd/CP}$ { 他說過那樣的話/ 你跟我一起上過學 }]].
c. '忘れずに...する, 記憶している': vt. <{Pe, Ag/{Pe/Pd}と, Ex }>
[忘れずに [$_{Pe/CP}$ PRO 電燈を消しなさい]];
[[$_{Ex/PP}$ 私は] [$_{PP}$ [$_{Pe/CP}$ PRO 彼に一度會った] と] 記憶している];
[[$_{Ex/PP}$ 私は] [$_{PP}$ [$_{Pd/CP}$ { 彼が そんなことを言った/ 君が彼と一緒に學校に行った }] と] 記憶している].
(157) a. 'warn': vt. [Go, Pe, Ag]
[[$_{Ag/NP}$ He] warned [$_{Go/NP}$ me] [$_{Pe/CP}$ PRO not to see his daughter any more]].
b. '警告': vt. [Go, Pe, Ag]
[[$_{Ag/NP}$ 他] { 警告 [$_{Go/NP}$ 我]/ [$_{Go/PP}$ 向我] 警告 } [$_{Pe/CP}$ PRO 不要再見他女兒]].
c. '警告する': vt. <Go, Peと, Ag>
[[$_{Ag/PP}$ 彼は] [$_{Go/PP}$ 私に] [$_{PP}$ [$_{Pe/CP}$ PRO 彼の娘に會うな] と] 警告した].
(158) a. 'promise': vt. [Go, Pe, Ag]
[[$_{Ag/NP}$ She] promised [$_{Go/NP}$ me] [$_{Pe/CP}$ PRO to buy me a new bicyle]].
b. '答應': vt. [Go, Pe, Ag]
[[$_{Ag/NP}$ 他] 答應 [$_{Go/NP}$ 我] [$_{Pe/CP}$ PRO 買一輛新腳踏車給我]].
c. '約束する': vt. <Go, Peと, Ag>
[[$_{Ag/PP}$ 彼女は] [$_{Go/PP}$ 私に] [$_{PP}$ [$_{Pe/CP}$ P(P)RO 新しい自轉車を買ってくれる]

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51. 'v.' stands for an unaccusative verb which is capable of assigning partitive Case to the NP that follows it.

52. 'v(t).' stands for an ergative verb which can be used as an "inchoative intransitive" verb as well as a "causative transitive" verb.

と] 約束した].

The above examples further illustrate how the argument structure of a predicate verb can be specified in the form of a theta-grid according to how many arguments the predicate verb licenses and what semantic role (i.e. theta-role) each argument receives. The association between assigned theta-roles that represent the "s(emantic)-selection" property of the predicate verb and syntactic categories that these semantic roles turn into in surface sentences is to a large extent predictable by the "Canonical Structure Realization" or "c(ategorial)-selection" tendency of theta-roles. Though the association between assigned theta-roles and argument positions (i.e. internal argument, external argument or semantic argument) is also to a certain extent predictable (e.g. in an active sentence, Agent always becomes subject), we place the theta-role that represents the internal argument (i.e. object or complement) at the left periphery of the theta-grid, and the theta-role that represents the external argument (i.e. subject), at the right periphery of the theta-grid. We also specify the subcategorial feature of predicate verbs (e.g. 'vi.', 'vt.', 'v(t).', 'v.') to account for the difference in their Case-assigning capacity. Whatever idiosyncratic properties, lexical or syntactic, may exist with regard to particular predicate verbs, they are also specified in their theta-grids. Thus, the lexical entries of corresponding verbs between different languages can be explicitly and economically compared in terms of the number of arguments they license, types of theta-role assigned to these arguments, syntactic categories and grammatical relations these arguments are associated with, along with such idiosyncratic syntactic features as inherent Case-marking of complements, marked choice of adpositions, and permutability between complements, between adjuncts or between a complement and an adjunct. Our analysis shows that among the contents of the theta-grid, the argument structure, thematic property, and selection of internal and external arguments with regard to the corresponding predicate verbs between different languages are essentially the same, and that what may differ from each other is the subcategorization feature (and the resultant difference in Case-assigning capacity), and certain idiosyncratic syntactic features mentioned above. The mapping of theta-grids to D-structures and/or S-structures is also quite simple and straightforward. The X-bar Convention, replacing phrase structure rules, or rather serving as well-formedness conditions on various syntactic constructions including sentences, will provide us with appropriate hierarchical structures, into which various arguments specified in theta-grids plus those introduced by lexical redundancy rules can be inserted. We can look upon our structural tree projected from the theta-grid of a predicate verb or adjective as a kind of Christmas tree which has an "endocentric" trunk and "binary" branches, and all sorts of arguments available serve as Christmas decorations to be hung on their proper positions in the tree according to the instructions given in the theta-grid. The linear order of the arguments, on the other hand, is largely an issue of parametric settings which include parameters of Case-assignment and argument-placement (or theta-marking) directionality[53]. In generating or licensing surface sentences, moreover, principles of universal grammar such as the X-bar Convention, the Projection Principle, the Full Interpretation Principle, the Theta Criterion, the Case Filter, the Adjacency Condition and the Economy Principle (i.e. movement as "the last resort")[54], must be strictly observed across languages. Thus, while language-particular distinctions are chiefly accounted for by fixing the values of relevant parameters[55], cross-linguistic similarities follow from sharing the same principles of universal grammar.

At a more abstract and general level, language typology can also be discussed in terms of universal principles and parameters. The distinction between the so-called

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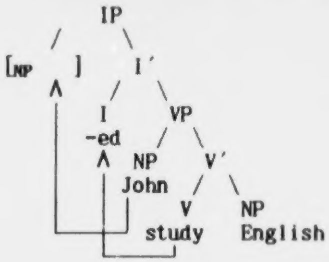
[53] Note that we have placed the internal and external arguments at the left-periphery and right-periphery of the theta-grid, respectively, and also indicated the permutability of arguments by enclosing them in angle brackets, which provides further information for the linearity of the arguments involved.

[54] For other principles and conditions of universal grammar, see Tang (1989d, 1990a, 1991a, 1992d, 1994a).

[55] The periphery of a particular grammar, which is responsible for marked constructions in each language, also contributes to language-particular idiosyncracies.

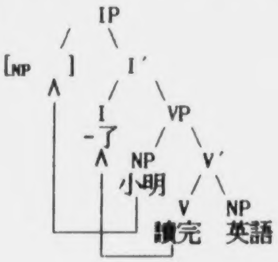
"SVO language", "SOV language" and "VSO language", for example, can be ascribed to the difference in Case-assignment and theta-marking directionality as well as the relative positioning of the inflection 'I' and its complement VP. Consider English, a typical SVO language, in which the complement VP appears to the right of the inflection head, and the subject NP originates in the specifier position of the VP but raises to the specifier position of the immediately dominating IP so as to acquire nominative Case, while the object NP appears to the right of the transitive verb to receive accusative Case, yielding an SVO sentence, as illustrated in (159):

(159)

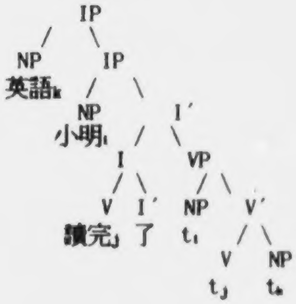


Next, in Chinese, which is also an SVO language with an SOV variant, the complement VP also appears to the right of the inflection head with the subject NP raising from [Spec, VP] to [Spec, IP], and the object NP appearing to the right of the transitive verb, so as to acquire nominative and accusative Case, respectively, yielding an SVO sentence (160a) or, alternatively, the object NP adjoins to the periphery of the immediately dominating IP, yielding an OSV sentence (160b), with subsequent adjunction of the subject NP to a newly created IP, yielding an SOV sentence (160c)[56]:

(160) a.



b.



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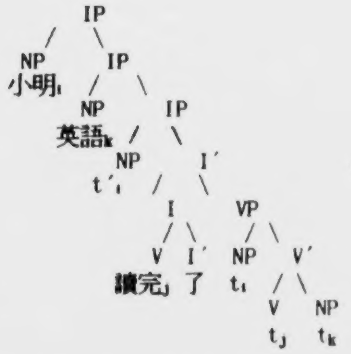
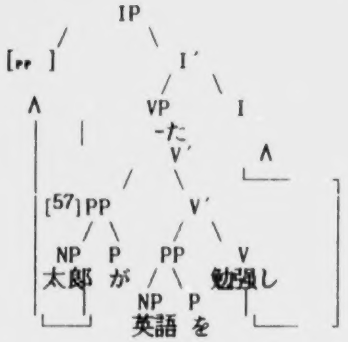
[56] The object NP introduced by the preposition '把' and receiving oblique Case from it may also appear between the subject NP and the predicate verb, as illustrated in '小明把英語讀完了', which also manifests the apparent SOV order.

c.

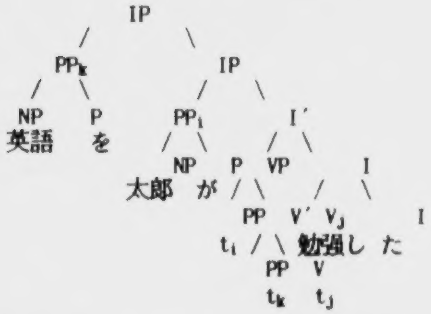

IP
NP
小明i
IP
NP
英語k
IP
NP
t′i
I′
I
VP
V
I′
NP
V′
讀完j
了
ti
V
NP
tj
tk

Finally, in Japanese, which is a typical SOV language, the complement VP appears to the left, rather than the right, of the inflectional head, and the head verb appears to the right, rather than the left, of its complement and specifier. Since all NPs, including the subject NP, receive Case from postpositions that follow them, no movement seems to be necessary for reasons of Case-assignment, yielding an SOV sentence (161a) or, alternatively, by adjoining the object NP to the IP, yielding an OSV sentence like (161b):

(161) a.


IP
[PP]
I′
VP
I
-た
V′
[57]PP
V′
NP
P
PP
V
太郎
が
勉強し
NP
P
英語
を

b.


IP
PPk
IP
NP
P
PPi
I′
英語
を
NP
P
VP
I
太郎
が
PP
V′
Vj
I
ti
勉強し
た
PP
V
tk
tj

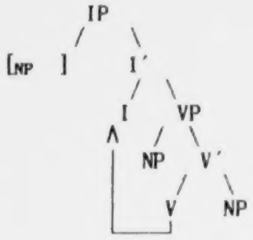
Furthermore, Chomsky and Lasnik (1991:35) point out that if the verb in a tree structure like (162a) raises to the head position of IP and the subject NP remains in the specifier position of VP, then we have an instantiation (162b) of a VSO language [58]:

---

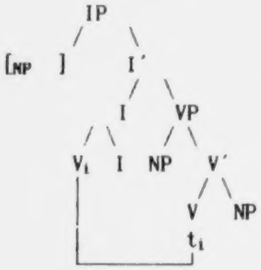
[57] We are by no means sure that the subject NP '太郎が' should be raised to [Spec, IP], since there seems to be no "self-serving" purpose for such movement at S-structure. The movement may be necessary, however, at LF to check Spec-Head Agreement.

[58] Chomsky and Lasnik (1991:35) propose that while V raises to I at S-structure, its

(162) a.



b.



Next, let us examine the cross-linguistic variation in WH-Fronting, an application of the rule Move α (or more generally, Affect α). English differs from Chinese and Japanese in that it moves the wh-phrase or question-phrase to the periphery of the proposition (more precisely, to [Spec, CP] in the case of English) at S-structure, while the latter do so only at LF [59] (perhaps, by adjunction to IP) to indicate the scope of the question-phrase. In the case of a multiple wh-question, in which more than one question-phrase occurs, English allows only one question-phrase to move by S-structure while the others remain "in-situ" at S-structure and move to clause-peripheral position at LF. Thus, languages may differ in (i) whether they allow overt or visible movement of question-phrases at S-structure, and (ii) if they do, how many question-phrases may move and where they move. In an English-type language, only one question-phrase moves to [Spec, CP] at S-structure; in a Polish-type language more than one question-phrase can be moved at S-structure, one moving to [Spec, CP] and the rest adjoining to clause-peripheral position [60]; and in a Chinese/Japanese-type language, all question-phrases remain in-situ at S-structure. All languages, however, move the question-phrases in-situ to clause-peripheral position at LF [61] to indicate their scope. Interestingly enough, this typological distinction between overt (English and German) and covert (Chinese and Japanese) movements of question-phrases at S-structure seems to be closely related to another typological difference in the position and function of the head (i.e. the complementizer C) of CP, which in turn seems to be related to the typological distinction between the presence and absence of final particles as well as Auxiliary Preposing. In English and German, C appears to the left of its IP complement and may be occupied by a complementizer (e.g. 'that, whether, for' in English) or serve as a landing site for an auxiliary to move in; in Chinese and Japanese, on the other hand, C seems to appear to the right of its IP complement and may be occupied by final particles (including the relative clause or modification marker (的), as illustrated in (163), (164) and (165):

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subject raises to [Spec, IP] only at LF.

[59] In fact, Chinese and Japanese do allow optional movement of question-phrases at S-structure, as illustrated in '(誰/那一種人)你最能信賴?' and '(誰を貴方は信頼しています/何んな人間が貴方は一番信頼できます)か?'.

[60] Note that across-the-board movement of a coordinate construction containing more than one question-phrase is possible with English, as illustrated in 'When, where and how did John study?'.

[61] See Huang (1982) and much subsequent work.

(163) a. [$_{CP}$ [$_{C}$ -WH] [$_{IP}$ I know [$_{CP}$ [$_{C}$ that] [$_{IP}$ John will come]]]].
b. [$_{CP}$ [$_{C}$ -WH] [$_{IP}$ I don't know [$_{CP}$ [$_{C}$ whether] [$_{IP}$ John will come]]]].
c. [$_{CP}$ [$_{C}$ -WH] [$_{IP}$ This IS [$_{NP}$ the book [$_{CP}$ Op [62] [$_{C}$ that] [$_{IP}$ I bought t yesterday]]]]]!
d. [$_{CP}$ [$_{C}$ Will] [$_{IP}$ John [$_{I}$ t] come]]?
(164) a. [$_{CP}$ [$_{IP}$ 我是知道 [$_{CP}$ [$_{IP}$ 小明會來] [$_{C}$ -WH]] [$_{C}$ 的]]].
b. [$_{CP}$ [$_{IP}$ 我不知道 [$_{CP}$ [$_{IP}$ 小明會不會來] [$_{C}$ +WH]]]]].
c. [$_{CP}$ [$_{IP}$ 這是 [$_{NP}$ [$_{CP}$ Op [$_{IP}$ 我作天買 t] [$_{C}$ 的]] 書] [$_{C}$ 呢]]]!
d. [$_{CP}$ [$_{IP}$ 小明會來] [$_{C}$ 嗎]]?
(165) a. [$_{CP}$ [$_{PP}$ [$_{NP}$ [$_{CP}$ [$_{IP}$ (私は) 太郎が來る] [$_{C}$ -WH]] こと] は] 知っている] [C さ]].
b. [$_{CP}$ [$_{PP}$ [$_{CP}$ [$_{IP}$ (私は) 太郎が來るか {來ない/どう} か] [$_{C}$ +WH] は] 知らない] [C ぜ]].
c. [$_{CP}$ [$_{IP}$ これは [$_{NP}$ [$_{CP}$ Op [$_{IP}$ 私が 昨日 t 買った] [$_{C}$]] 本] だ] [$_{C}$ よ]].
d. [$_{CP}$ [$_{IP}$ 太郎は來ます] [$_{C}$ か]]?

The complementizer position is specified with the feature '-WH' or '+WH', or simply left unspecified. In an English-type language, in which C precedes IP, the C containing the feature '-WH' will be filled in by the declarative complementizer 'that' (as in (163a)) or 'for' [63], depending on whether the following IP is a finite or non-finite (i.e. infinitival) clause; the C containing the feature '+WH', on the other hand, will be filled in by the interrogative complementizer 'whether' (as in (163b)) or 'if' [64], or when left empty, serves as a landing site for an auxiliary to move in (as in (163d)); and the C without the feature specification '-WH' or '+WH' and dominated by both CP and NP, will be filled in by the complementizer 'that' which introduces a relative clause (as in (163d)) or an appositional clause [65]. In a Chinese/Japanese-type language, in which C follows rather than precedes IP, the C will be filled in by various types of final particles that indicate the mood or illocutionary force of the speaker. Thus, the C containing the feature '-WH' is filled in by declarative particles such as '哩, 的, 呢; ぜ, ぞ (male-speaker-oriented), わ (female-speaker-oriented), よ (speaker-oriented), ね (addressee-oriented)'; the C containing the feature '+WH', by interrogative particles such as '嗎 (yes-no question), 呢 (choice-type question and wh-question); か'; and the C containing neither '-WH' nor '+WH', by other particles such as '吧 (conjectural or optative); な (conjectural or optative), さ (certainty)' if it occurs in a root sentence, and by the subordinate marker '的; の, φ' [66] if it is dominated by both CP and NP.

In English-type languages, the presence of the feature '+WH' under C not only indicates the semantic type of the following IP (i.e. question or Pq) and selects the proper complementizer in concert with the tense feature specification under I(nflection) (or under T(ense), if there is an independent motivation for the existence of TP), but also serves as a kind of "force indicator" which attracts the question-phrase to [Spec, CP]. Moreover, when the C containing the feature '+WH'

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62. 'Op' stands for the null operator or empty relative pronoun, the movement of which leaves a trace 't' behind in the relative clause.

63. As in 'I want very much for John to come.'

64. The interrogative complementizer 'whether' may introduce either finite or non-finite clauses (e.g. 'I don't know whether {I should go/to go} (or not)'), while 'if' may only introduce finite clauses (e.g. 'I don't know if {I should go/*to go} (or not)').

65. As in 'the rumor that Mary has eloped with John.'

66. While the Chinese '的' introduces relative and appositional clauses and functions as a subordinate or modification marker, the Japanese 'の' serves as a nominalizer, as in '僕は [$_{PP}$ [$_{CP}$ [$_{IP}$ 學校へ行く] [$_{C}$ の]] が] 嫌になった'. Japanese clauses can also be nominalized by taking so-called "formal nouns" (e.g. 'こと, もの, ところ, とき'), as in '僕は [$_{PP}$ [$_{CP}$ [$_{IP}$ 學校へ行く] [$_{C}$ こと]] が] 嫌になった'. As for Japanese relative clauses, no relative or subordinate marker is needed.

occurs in a root sentence, it will also serve as a landing site for a modal or aspectual auxiliary to move in, yielding a direct question. In Chinese/Japanese-type languages, the feature specification under C also indicates the semantic type of the preceding IP and licenses the insertion of proper final particles which are in accord with the semantic type of the preceding IP. In the case of the feature '+WH', it will trigger a "V-not-V" question if no question-phrase occurs in the IP and, moreover, the I is also specified as '+WH', as illustrated in the Chinese sentence (164b) [67] and the Japanese sentence (165b). As the specifier and the head positions of CP in Chinese and Japanese are separated by the intervening IP, the sentence-final C containing the feature '+WH' neither attracts a question-phrase to [Spec. CP] nor serves as a landing site for a modal or aspectual verb to move in from the constituent I position, which seems to account for the non-occurrence of from-right-to-left WH-Fronting and Auxiliary Preposing in Chinese and Japanese surface sentences [68]. The raising of a final particle from the constituent C position to the matrix C position, however, can happen when an interrogative particle which originates in the constituent sentence raises to the matrix sentence to receive "wide-scope" interpretation. Thus, Chinese verbs such as '認爲, 以爲, 猜' may take questions or interrogative clauses as their complements only when these questions receive wide-scope interpretation; that is, the entire sentence is interpreted as a question. In this case, interrogative particles (e.g. 嗎, 呢) originate in the constituent C position (and even trigger V-not-V question, as illustrated in (166b)) but raise to the matrix C position, as illustrated below:

(166) a. [$_{CP}$ [$_{IP}$ 你認爲 [$_{CP}$ [$_{IP}$ 他會來] [$_{C}$ 嗎]]] [$_{C}$ +WH]]?
--> [$_{CP}$ [$_{IP}$ 你認爲 [$_{CP}$ [$_{IP}$ 他會來] [$_{C}$ t]]] [$_{C}$ 嗎]]?
b. [$_{CP}$ [$_{IP}$ 你以爲 [$_{CP}$ [$_{IP}$ 他會不會來] [$_{C}$ 呢]]] [$_{C}$ +WH]]?
--> [$_{CP}$ [$_{IP}$ 你認爲 [$_{CP}$ [$_{IP}$ 他會不會來] [$_{C}$ t]]] [$_{C}$ 呢]]?
c. [$_{CP}$ [$_{IP}$ 你猜 [$_{CP}$ [$_{IP}$ 誰會來] [$_{C}$ 呢]]] [$_{C}$ +WH]]?
--> [$_{CP}$ [$_{IP}$ 你猜 [$_{CP}$ [$_{IP}$ 誰會來] [$_{C}$ t]]] [$_{C}$ 呢]]?

Languages can also be compared in terms of the Head-Initial versus Head-Final Parameter (or, alternatively, the Theta-Marking or Theta-Assignment Parameter, the Case-Assignment Parameter and/or the Argument-Placement Parameter [69]), which accounts for, among other things, the "mirror-image" phenomenon in linear order of constituents between English and Chinese.

(167) a. John [$_{VP}$ [[[[studied English] diligently] at the library] yesterday]].
b. 小明 [$_{VP}$ 昨天 [在圖書館 [認眞地 [讀書]]]].

The contrast between (167a) and (167b) clearly shows that, with regard to the head verb and its adverbial modifiers, English is head-initial and left-branching while Chinese is head-final and right-branching. If the linear order of modifiers is, in general, determined by semantic proximity between the head and its modifiers (i.e. modifiers which are semantically closer to the head appear locationally nearer to it as well), then the reverse order of adverbial modifiers manifested in the head-initial English and the head-final Chinese is a natural consequence [70]. A corollary of this is, when these different types of adverbials appear together in the form of a question-phrase in a coordinate construction and move to the sentence-initial position as a result of WH-Fronting, the linear order of the adverbials will be the same for English and Chinese, since in this case the question-adverbials precede the head

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67. For detailed discussions of Chinese "V-not-V" questions, see Huang (1991) and Guo (1992).

68. For a somewhat different proposal to account for the occurrence and non-occurrence of overt WH-Fronting at S-structure, see Cheng (1991).

69. We will not discuss here which parameter is the least stipulative or whether parameters can be unified into one.

70. The fact that the object NP follows the head verb in both languages is accounted for by the Case-Assignment Parameter, according to which the transitive verb assigns accusative Case to its object NP from left to right in both languages.

verb [71] in both languages, manifesting a surface "head-final" configuration. Compare:

(168) a. When, where and how did John study English?
      b. 小明 什麼時候、在什麼地方、怎麼樣 讀英語?

Finally, we would like to mention briefly how our "minimalist" approach might have relevance to the theory of machine translation.

By comparing not only the contents of the theta-grids for the corresponding verbs of English, Chinese and Japanese but also the way they project into surface sentences, we think our theta-grids, along with the few principles and parameters discussed above, provide vital information for language parsing in a very simple format. Among other things, the number of obligatory arguments, the distinction between internal (i.e. object), external (i.e. subject) and semantic (i.e. adjunct) arguments, the optionality and permutability of arguments at S-structure, the syntactic categories that these arguments are turned into (via canonical structure realization), the selection of marked and unmarked adpositions (including prepositions, postpositions and subordinate conjunctions) for the arguments, and partial linearity among the arguments, are either listed in theta-grids or handled by lexical redundancy rules. The mapping of theta-grids to surface sentences is also quite simple and straightforward, since there are only a few principles and constraints to observe and a few parameters to choose from.

The X-bar Convention, simple in form and content, seems to obviate the necessity for phrase structure rules which essentially repeat the information already provided in the theta-grids. If endocentricity of phrasal constructions and binary branching of their constituents are strictly observed, the majority of improper structural descriptions will be eliminated, thus considerably reducing the burden of sentence parsing. Furthermore, transfer rules can also be reduced to the minimum or even entirely eliminated. Suppose that the lexicon (or data base) consists of lexical items which contain a theta-grid as part of their lexical entries and, furthermore, that the lexical entries for the corresponding verbs, adjectives, nouns, adverbs, adpositions, etc. between the input and output languages are listed side by side in the lexicon. Instead of writing separate sets of phrase structure rules for each language and two different sets of transfer rules for each pair of languages[72], we simply look up the lexical items appearing in the input text in the lexicon, match them with the corresponding lexical items in the output language and, using the information provided by the theta-grids for these lexical items (especially, the predicate verbs and adjectives), translate the input text into the output language, by the parallel analysis of the input text in terms of theta-grids and mapping of the corresponding theta-grids in the output language to surface sentences. In this sense, our approach is "lexicon-driven" and "multi-directional". It is admitted, however, that there are still some problems to be solved (e.g. exactly how many theta-roles are necessary for natural languages, and how should we identify them?) and thorny technical details to be worked out (e.g. how should the contents and functions of theta-grids be stated in a computer language so that they can be readily understood by the computer?)[73].

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[71] If these question-adverbials are analyzed as sentential adverbials, then they also precede the head IP (i.e. S).

[72] This means that, given n languages, there need to be n sets of phrase structure rules and $n(n-1)(=n^2-n)$ sets of transfer rules.

[73] For a more detailed discussion of our approach to machine translation, see Tang (1992d), which deals with more specific issues such as the "garden path" phenomenon in language processing and the disambiguation of syntactic ambiguity.

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TYPES OF TONE SANDHI IN MANDARIN DIALECTS AND A FORMAL MODEL OF TONE

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0. Introduction. Like other phonological processes, tone sandhi in general may be viewed as natural processes which are to a large extent phonetically motivated.[1] During the past few decades great strides have been made in our understanding of the working of tone sandhi in individual languages as more detailed documentation has become available. However, some broader, fundamental questions such as the nature of tone sandhi, the properties of tone sandhi rules, and the relation of tone sandhi to other prosodic units have not been fully answered. With regard to the Chinese languages, our understanding of these broader issues remains poor even within the better-studied languages mostly due to the complexities of dialect variation and to incomplete documentation. Despite the difficulty of obtaining sufficient data, initial attempts to probe into the broad issues regarding tone sandhi can be made based on the data accessible so far. This paper thus intends to serve as a preliminary study of the nature of tone sandhi as it looks into the types of tone sandhi found in a number of Mandarin dialects documented and representative of different Mandarin-speaking regions. In this preliminary investigation, I single out two widely discussed and highly controversial dialects, Changzhi and Pingyao, for lengthy expositions, and offer alternative analyses of their peculiar tone sandhi behavior. In concluding the paper, I disucss the implications of these tone sandhi properties for constructing a general theory of tone.

1. Tone Sandhi Rules in Mandarin Dialects

1.1. Dialects surveyed and their tone systems. Among the major Chinese languages, Mandarin has the most speakers and occupies a vast territory (Norman 1988). The language (i.e. entire dialect group) is further divided into subgroups on the basis of geographical locations.[2] For this study, representative dialects from each major region for which sufficient documentation is available are used. Before we discuss the tone sandhi, the tone systems of the dialects studied are first listed in (1) below.

(1) Tone systems of Mandarin dialects:[3]

Tonal category	1	2	3	5	7	8
Beijing(BF)	55	35	214	51		
Tianjin(BF)	21	45	213	53		
Xuzhou(BF)	213	55	35	42		
Xian (XB)	21	24	53	45		
Pingyao(XB)	13	13	53	35	23	54
Changzhi(XB)	213	24	535	44/53	4	54
Chengdu(XN)	44	31	53	13		
Wuhan(XN)	55	213	42	35		
Zhenjiang(JH)	42	35	31	55	5	5
Yangzhou(JH)	31	34	42	55	4	4
Hefei (JH)	212	55	24	53	4	4

In terms of tone sandhi in these dialects, two general observations are worthy of note: first, tone sandhi does not seem to be conditioned by the tonal categories which correspond historically with the Middle Chinese categories; instead, tone sandhi is clearly related to the tone values in the modern dialects and is perhaps triggered by other prosodic factors such as stress and the prosodic template in the dialect. Second, tone systems with almost identical tonal inventories (e.g., Zhenjiang and Yangzhou) may not have identical sandhi processes; however, dialects within the same group tend to share certain sandhi processes. These points are made clear in subsequent discussions.

1.2. Tone sandhi in the northern (BF) dialects. The best known tone sandhi in Mandarin is that of Beijing in which a third tone changes into a high rising value (i.e. T2) when followed by other T3 syllables.[4] In the BF subgroup, the northeastern region (Manchuria) is most similar to the Beijing dialect; e.g., Shenyang (as documented in Yuan 1960) has the same tone system and the T3 sandhi as that of Beijing except for the lower register on the first tone ([33]). In contrast, the dialect spoken in Tianjin, about just 120 kilometers southeast of Beijing, has a set of tone sandhi quite distinct from that of Beijing, despite the obvious similarity in tone values in citational tone categories. Tianjin tone sandhi occurs pervasively in the preceding syllable of a disyllabic string, the rule of which is illustrated below:[5]

(2) Tianjin tone sandhi (Li and Liu 1985):[6]

a. 21 ---> 213 / ____ 21 i.e. ∅ --> h/ l____ l

b. 213 ---> 45 / ____ 213 i.e. L --> H/ ____ L

c. 53 ---> 21 / ____ 53 i.e. H.h l --> L/____ H.h l

d. 53 ---> 45 / ____ 21 i.e. h l --> l h / ____ L.l

These sandhi processes are clearly dissimilatory in nature; i.e., both (2b) and (2c) involve register dissimilation, while (2a) and (2d) involve the dissimilation of pitch specifications. With regard to the complex contour tone [213] and rule (2a), some clarification is needed; that is, in light of the rare occurrence of complex contours preceding other syllables, (2a) seems odd for it changes a low falling tone to a complex contour (i.e., low-falling-rising) when followed by another low falling tone. If the complex contour tone documented in Tianjin is similar to that of T3 in BM, the duration of the syllable bearing this tone should be much longer than that of the syllables bearing other tones. However, according to the phonetic studies by Shi (1990), the duration of the documented complex contour tone in Tianjin, whether it be the sandhi tone in (2a) or the citation tone in (2b), is not any longer than that of other tones. Based on this finding and the appearance of a clear rising contour in the phonetic studies, Shi treats this tone as simply a low rising tone [13], of which analysis is adopted here.

Another relatively well-documented BF dialect is Xuzhou, spoken in northern Jiangsu close to the border with Henan and Shangdong provinces. Like Beijing, major sandhi in Xuzhou is concerned with the complex contour tone [213].

(3) Xuzhou tone sandhi:

213 ---> 13 / ____ 213

213 ---> 22 (or 21) / ____ X (X: all other tones)

(3) is reminiscent of the T3 sandhi in Beijing: the complex contour is never fully realized unless prepausally. The difference between the Xuzhou sandhi and the Beijing T3 sandhi is mainly in the register dissimilation which Beijing undergoes, but Xuzhou does not. In addition to (3), a lexical sandhi process in Xuzhou merits some discussion.

In reduplicated forms, there is a strong tendency for the second reduplicated syllable to surface as a high level tone [55].[7] In addition, there is triplication in the Xuzhou lexicon which gives the following patterns:

(4) Triplication in Xuzhou:

a. [213]:	[22 - 55 - 213]
b. [55]:	[55 - 55 - 55]
c. [35]:	[35 - 55 - 213]
d. [42]:	[42 - 55 - 213 or 42]

With the exception of (4b), one may consider the second and third syllables in triplicated forms to follow a template with the first syllable maintaining its original tone.[8] It is most likely that the high level tone in the middle is motivated by weak stress; evidence of this comes from a similar reduplication process involving three syllables (i.e., the BBA pattern), in which the second syllable can be either a [55] or neutral-toned (0).

(5) Triplication and BBA reduplicates involving [213] (Li 1985:36-38):[9]

a. [tian 213]:	[tian22-tian55-tian213]	'everyday'
b. [ban213-ban213-gao213]:	(i) [ban22-ban55-gao213]	'that tall; the same
	(ii) [ban22-ban 0-gao213]	height'

1.3. Tone sandhi in the southwestern (XN) dialects. Tone sandhi in the XN dialects tend to be limited. The following are the tonal alternations documented for Chengdu (in Sichuan), and Wuhan (in Hubei) repectively (Beijing Daxue 1964, and forthcoming):[10]

(6) Chengdu lexical sandhi:

a. 31 ---> 44 / 31 ____ i.e. L ---> H / L
13 ---> 44 /13 ____ x y h x y ____

b. 53 ---> 31 / 53 ____(in some reduplicates) i.e. H ---> L / H
(---> 44 (in a few isolated cases)) h l h l ___

(7) Wuhan tone sandhi:
213 ---> 13 / ____ 213
213 ---> 21 / ____ X

(7) is the same as (3), once again indicating the preference of partial realization of the complex contour tone. The Chengdu lexical sandhi (6a) and the major pattern of (6b) are both dissimilatory; i.e., in a sequence of identical tones, low register contour tones become high register level tones, whereas a high falling tone becomes a low falling tone. Furthermore, note that morphemes which undergo these changes tend to be functional morphemes (e.g. suffixes) bearing little stress. Comparing Chengdu with nearby Kunming (in Yunnan) which has exactly the same tonal inventory as Chengdu, we find some differences in sandhi environments, but virtually the same processes (i.e., tonal change on weakly stressed syllables such as the second syllable in a reduplicated form and a suffixed form).

(8) Kunming lexical sandhi (based on the data from Beijing Daxue 1964):
53 ---> 44 / 53 ____
(in limited cases) i.e. X ---> H / X
31 ---> 44 / $\left\{\begin{matrix}31\\13\end{matrix}\right\}$ ____ h l h x y ____

1.4. Tone sandhi in the eastern (JH) dialects. Two JH dialects are examined here. Hefei, spoken in Anhui, has the following lexical sandhi, based on the data from the revised version of the Lexical Survey (due to Wang Hongjun, p.c.).

(9) Hefei lexical sandhi:

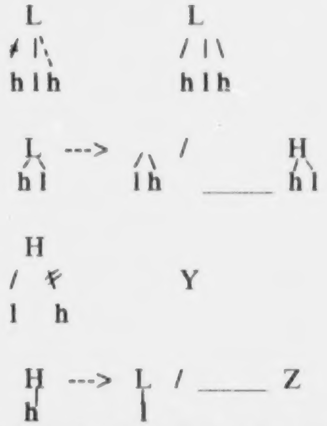
a. 212 ---> 12 / ____ 212 i.e.

b. 212 ---> 21 / ____ X

c. 21 ---> 12 / ____ 53

d. $24 \dashrightarrow 33 / \_\_\_\_ \left\{\begin{array}{l}212\\55\\24\\4\end{array}\right\}$

e. $\underline{4} \dashrightarrow \underline{21} / \_\_\_\_ \left\{\begin{array}{l}55\\24\\4\end{array}\right\}$



(X: all but the same tone; Y: all but the falling tone; Z: all but a L tone or a falling tone)

(9a) and (9b) are not different from the partial association of the complex contour tone which appears widely in other dialects examined so far. (9c) is crucially ordered after (9b) and can be considered as a contour dissimilation rule which metathesizes the tonemes when followed by a falling tone. The dialect's preference for alternating pitch contour may be indicated by the more complicated rule (9d) in which the rising tone [24] undergoes contour simplification (i.e., becoming a mid tone) when followed by all but the falling tone [53] and rule (9e) which alters the high checked tone to low when followed by all high tones except the high falling tone.

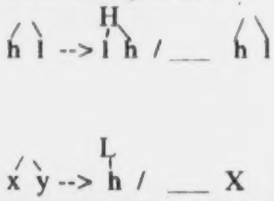
Another JH dialect, Zhenjiang, spoken in Jiangsu, exhibits the following sandhi alternations:

(10) Zhenjiang lexical sandhi (based on data from Zhang 1985):

a. $\left\{\begin{array}{l}42\\31\end{array}\right\} \dashrightarrow 35 / \_\_\_\_ \left\{\begin{array}{l}42\\31\end{array}\right\}$ i.e.

b. $\left\{\begin{array}{l}42\\31\end{array}\right\} \dashrightarrow 33 / \_\_\_\_ \left\{\begin{array}{l}35\\55\\\underline{5}\end{array}\right\}$

c. $35 \dashrightarrow 33 / \_\_\_\_ \left\{\begin{array}{l}55\\\underline{5}\end{array}\right\}$



(X: all but the same nonfalling high tones)

(10a) is clearly a contour metathesis rule which dissimilates the first falling contour when followed by another falling tone; moreover, when two low falling tones are in a sequence, there is also register dissmilation as well as contour metathesis. In (10b) falling tones undergo contour simplification when followed by nonfalling high tones. High rising tone is simplified to level when followed by (high) level tones in (10c).

1.5. Tone sandhi in the northwestern (XB) dialects. Among all the Mandarin dialects of which documentation is available, the XB dialects exhibit the most sandhi complexity. Pingyao and Changzhi, two widely discussed dialects spoken in Shanxi are to be closely examined in Section 2. As we shall see, the tone sandhi in these two dialects involves register spread (i.e. assimilation) as well as dissimilation, contour metathesis and a number of the prosodic conditions in the case of Changzhi. Despite the preliminary nature of the investigation, these properties are important in understanding the extent and working of tonal alternations in Mandarin. Before we get into the detailed discussion of Pingyao and Changzhi, we look at Xian, a XB dialect with relatively simple tone system and tone sandhi. Based on the Lexical Survey (Beijing Daxue 1964), Xian has two sandhi alternations within the lexicon as in (11).

(11) Xian lexical sandhi:

a. 21 ---> 24 / ____ 21 i.e. $\overset{L}{h\ l} \dashrightarrow \overset{H}{l\ h}\ /\ \_\_\_\_\ \overset{L}{h\ l}$

b. 53 ---> 21 / ____ 53 $\overset{H}{h\ l} \dashrightarrow L\ /\ \_\_\_\_\ \overset{H}{h\ l}$

Both rules are dissimilatory. (11a) involves both register and contour dissimilation, whereas (11b) involves only register dissimilation. The sketchy documentation prevents us from knowing whether these two alternations apply generally without exception and whether they cover all the tonal alternation cases in Xian.

Before a summary can be made of the types of tone sandhi found in this study, let us now turn to the discussion of the tone sandhi in Pingyao and Changzhi.

2. Tone Sandhi in Pingyao and Changzhi Revisited

2.1. Pingyao. There are five citation tones in Pingyao which have been listed in (1): [13], [53], [35], [$\underline{23}$] and [$\underline{54}$]; but since the two checked tones [$\underline{23}$], [$\underline{54}$] have exactly the same patterns of sandhi alternation as those of [13] and [53], the two sets can be treated with the same underlying representations. In disyllabic strings, the first syllable tends to undergo sandhi alternations, giving rise to patterns in (12).

(12)

$\sigma_1 \setminus \sigma_2$	13	35	53
13	13-13	*31*-35	$\underline{\textbf{35-423}}$
35	$\underline{\text{13-13}}$	*31*-35	35-**423**
53	53-13	53-35	***35*-423**

Bao (1990) first brings two cases of register assimilation in Pingyao to the spotlight in support of the process of register spread predicted by his tone model. One case is the [13-13] pattern surfaced when [35] is followed by [13]; the other is the [35-423] pattern resulting from [13] followed by [53] (the underlined forms in (12)). In his analysis, a metathesis rule is needed to account for the italicized patterns in (12), and a phonetic detail rule accounts for the surface pitch change from [53] to [423] in the third column. Furthermore, when two [35] syllables are in a sequence, the surface pattern of [31-35] seems to require a register dissimilation rule in addition to contour metathesis. (13) summarizes the four rules proposed by Bao to account for Pingyao lexical sandhi:

(13) Bao's rules (1990:91-95):[11]

(a) Register lowering:

$H \dashrightarrow L\ /\ \underset{l\ h}{\_\_\_\_}\ \ \overset{T}{l\ h}$ e.g. [35] --> [13] / ___ [35]

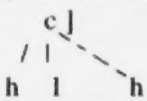
(b) Contour metathesis:

$x\ y \dashrightarrow y\ x\ /\ \_\_\_\_\ \ \overset{H}{x\ \ y}$ e.g. [13] --> [31] / ___ [35]
[53] --> [35] / ___ [53]

(c) Register assimilation:

$R \dashrightarrow \alpha R\ /\ \underset{l\ h}{\_\_\_\_}\ \ \alpha R$ e.g., [13] --> [35] / ___ [53]
[35] --> [13] / ___ [13]

(d) Contour formation: (phrase-final detail rule)



e.g. [53] --> [423] / ___ #

The register assimilation proposed for Pingyao has generated some debate. In defense of her 1989 model which does not allow register spread, Yip (1992) argues that the register assimilation observed by Bao (as in rule (13c)) is subject to an alternative analysis proposed by Chen (1991) and thus cannot be taken as a case of register spread. Chen's argument against Bao's analysis of Pingyao tone sandhi is based on simplicity considerations; i.e., he claims that the two rules (13a) and (13c) can be collapsed based on the observation stated in (14) below:

(14) Register neutralization: For a rising tone, if the following syllable begins with h (or l), replace the Register value with H (or L).[12]

Since this rule does not require register spread, Yip (1992) argues that Bao's claim of register spread is not valid.

On this, I object to Yip' argument for two reasons. First, ingenious and simple as it is, Chen's register neutralization rule poses serious theoretical problems. What is shorthanded as H/L and h/l in his statement has to be represented by two distinct tone features at distinct tiers in current theoretical models, and feature spreading across tiers is generally prohibited. It seems hardly justifiable to sacrifice theoretical rigor here just for the sake of simplicity. Second and more importantly, there is other evidence in Pingyao which does not support Chen's register neutralization analysis, but one with register spread, as we are to see now. In Hou's 1980 documentation of Pingyao, tone sandhi patterns are given for three types of disyllabic compounds classified on the basis of the grammatical relationship between the two syllables. Patterns listed in (12), those studied by Bao, demonstrate only what Hou termed Type A compounds.[13] The diverse Type B compounds exhibit tone patterns substantially different from those of Type A. Some examples of Type B compounds are given in (15) followed by a summary of the tone sandhi patterns in (16).

(15) Type B disyllabic compounds in Pingyao:

(a) [u 13 'black' - ia 13 'crow'] ---> [31-35] 'crow, raven'
(b) [t6i 13 'hunger' - xuang 13 'barren'] ---> [31-35] 'famine'
(c) [t6ia 13 'home' - t6y 35 'utensil'] ---> [13-13] 'furniture'
(d) [tiE 13 'shake' - tO 53 'upside down'] ---> [31-53] 'reverse'
(e) [tei 35 'big' - mEng 13 'door'] ---> [35-53] 'front gate'
(f) [ts'ung 13 'village' - Z^? 13 dimin. sufx.] --> [31-35] '(small) village'
(g) [xuE 35 'alley'- xuE 35] ---> [35-53] 'alley'
(h) [uang 13 'curvy' - uang 13] ---> [31-35] 'curvy, bent'

(16) Type B tonal alternations:

σ_1 / σ_2	13	35	53
13	**31-35** or 13-13	**13-13** or 31-35	**31-53** or 35-423
35	**35-53**	**35-53**	**35-53**
53	**53-13**	**53-35**	**53-53** or 35-53

The bold-faced patterns in (16) are the common patterns for Type B compounds (i.e., the second row starting with a [13] syllable and the second pattern for the [53-53] sequence which occasionally occurs when the first syllable is a checked [53] tone are minor patterns). Note that these minor patterns are exactly the same patterns for the corresponding sequences of the Type A compounds (cf. (12)).[14] One may speculate their appearance in Type B to be due either to an incomplete process of lexical diffusion or to dual-pattern sandhi alternations in certain types of compounds. For the purpose of our discussion, only the more common patterns for the Type B compounds are taken into consideration.

It is clear that metathesis also plays an important role in the sandhi patterns here. Metathesis applies to [13] when it is followed by [13] and [53] and when preceded by [35], and applies also to [35] when preceded by a [35]. These metathesis processes can be captured by the following rule:

> (17) Metathesis for rising tones in Type B compounds: A rising tone (l h) becomes falling (h l) when the preceding tone is a high rising tone (H/l h) or when the following tone starts at either the bottom (L/l) or the top (H/h) of the entire pitch range.
>
> $$\text{i.e.}\quad \text{l h} \dashrightarrow \text{h l}\,/ \left\{ \begin{array}{lll} \text{H} & & \\ \text{l h} & \underline{\qquad} & \\ \text{L} & & \text{L / H} \\ | & & |\quad\ | \\ \underline{\qquad} & & \text{l / h} \end{array} \right\}$$

Comparing this metathesis rule with that of Type A (as formulated by Bao in (13b)), we find that this rule is less general than (13b) and the conditions under which the rule applies are more cumbersome. However, it is possible to conclude that in Pingyao, a metathesis process applies generally to the rising tones, but the environments in which the rule applies differ somewhat according to different types of compounding relationships. The second sandhi process observed in Type B is register assimilation, which accounts for the register lowering of [35] when it is preceded by [13], and the register raising of [13] (which after metathesis becomes [31]) when it is preceded by [35]. This rule is stated as follows:

> (18) Register assimilation: The register value of the second syllable is assimilated to that of a preceding rising tone in the Type B disyllabic compounds. i.e. $R \dashrightarrow \alpha\, R \,/\, \alpha \underset{\text{l h}}{R}\ \underline{\qquad}$

This rule is again reminiscent of the register assimilation rule (13c) given by Bao for the Type A compounds. The main difference lies only in the direction of the spread.

Before we go on, let us return to the crucial debate regarding register spread in Pingyao. In the Type B compounds, the register raising and lowering occur in the second syllable instead of the first syllable of the compound as in the case of Type A. Assuming that both types of compounds share similar sandhi processes as we have discovered, we then would expect a register neutralization process along the line of (14) in Type B as well. However, no evidence can be successfully put forth for any such register neutralization process here; that is, the process of register assimilation (i.e. spread) does not seem dispensable in the account of Type B tonal alternations.[15] Furthermore, as mentioned earlier, even if the register neutralization rule may conveniently account for the register assimilation/dissimilation in the Type A compounds, the rule itself is theoretically problematic. Therefore, it is best to conclude that no register neutralization rule exists in Pingyao: instead, a rule of register assimilation is present in the Pingyao phonology, which applies to both Type A and Type B compounds under somewhat different conditions.

In addition to metathesis and register spread, a register dissimilation rule is needed to account for the register-raising of [13] when it is preceded by a metathesized [13]. This rule is formulated as (19) below:

(19) Register dissmilation (L-raising) in Type B: (crucially ordered before (18)) The register of the second syllable is dissimilated to high (H) when the preceding syllable has a L register. i.e. L ---> H / L _____

Again, this rule is also reminiscent of the register lowering rule (13a) formulated by Bao in which the first syllable of a [35-35] sequence undergoes a dissimilatory process, lowering its register. In comparison, (19) applies to the second syllable of a [13-13] sequence, raising the register value in this case.[16] The derivations of the sandhi patterns of Type B disyllabic compounds are given as follows:

(20) Derivations of Type B compounds: (Rules (17), (18), (19))

σ_1 - σ_2	Metathesis |	L-raising |	R-spread |	Output
13-13	31-13	31-35	n/a	31-35
13-35	n/a	n/a	13-13	13-13
13-53	31-53	n/a	n/a	31-53
35-13	35-31	n/a	35-53	35-53
35-35	35-53	n/a	____	35-53

Our findings regarding Pingyao tone sandhi may be summarized as the following two points: first, the process of register assimilation is strongly substantiated by the two types of Pingyao disyllabic compounds examined in this section. Yip's argument against register spread on the basis of the register neutralization rule proposed by Chen is untenable. Second, the great extent of similarity shared between the rules accounting for the Type A and the Type B tonal alternations does not appear to be a coincidence. It seems plausible that, for a language, there is a set of core phonological rules which may vary to certain degree (e.g. the conditions under which the rules apply) to make distinct different categories or functions. This latter point is worth pursuing further and may find support in some other Mandarin dialects to which we are to return shortly.

2.2. Changzhi. Like Pingyao, Changzhi is also a Mandarin dialect spoken in Shanxi of which the tone sandhi patterns have generated much debate. According to the documentations by Hou (1983), Changzhi has seven citation tones (i.e. [213], [24], [535], [44], [53], [4], and [54] as listed in (1)) and a number of different tone sandhi patterns which appear in different grammatical functions. In the following, I give some examples of the suffixed forms and the verbal reduplicates:

(21) a. Nominal suffix /tE; tE?/:[17]

(i) ts'E [213]	[ts'E 213 - tE? 213]	'car'
(ii) lung [24]	[lung 24 - tE? 24]	'wheel'
(iii) i [535]	[i 535 - tE? 535]	'chair'
(iv) t6iO [44]	[t6iO 44 - tE? 535]	'sedan-chair'
(v) tEu [53]	[tEu 53 - tE? 53]	'pea'
(vi) kuE? [4]	[kuE? 4 - tE? 4]	'valley'

(vii) tsuE? [54]	[tsuE? 54 - tE? 54]	'bracelet'

b. Adjectival suffix /ti/:

(i) suang [213]	[suang 213 - ti 213]	'sour'
(ii) xuang [24]	[xuang 24 - ti 24]	'yellow'
(iii) lEng [535]	[lEng 535 - ti 535]	'cold'
(iv) ts'Eu [44]	[ts'Eu 44 - ti 535]	'stinky'
(v) la? [4]	[la? 4 - ti 4]	'spicy'

(22) Verbal reduplicates:

sang [213]	[sang 213 - sang 35]	'to fan'
t6'iEu [24]	[t6'iEu 24 - t6'iEu 53]	'to beg'
ts'O [535]	[ts'O 535 - ts'O 35]	'to fry'
k'ang [44]	[k'ang 31 - k'ang 53]	'to look'
ung [53]	[ung 35 - ung 53]	'to ask'

In Bao's 1990 analysis, he treats the suffixed forms (e.g. (21)) as cases of tonal spread; i.e., suffixes /tE?/ and /ti/ get their surface tonal realizations from the preceding syllables except in the case of [44]. When the first syllable is [44], the following suffix surfaces with a [535] instead of a [44] tone. Bao attempts to explain away this exception by claiming that [44] is a default tone (i.e. an unmarked tone) in Changzhi, and that, since it is not specified, the underlying tone associated with the suffix surfaces. This analysis offered by Bao faces some difficulties: first, although Hou (1983) has stated clearly in his field report that /ti/ has the underlying tone [535], it is not clear whether or how /tE?/ gets the same underlying tone [535], since checked syllables carry either a short [4] or a short [54] tone in Changzhi. Second, the two checked tones in Changzhi generally have the same tonal alternations as [44] and [53] and thus can be treated with the same underlying representations as [44] and [53]. Now if [44] is unspecified (i.e. the default value) and cannot spread onto the suffix, one must wonder why the same surface pattern does not arise when the short checked tone [4] is the first syllable (i.e., compare (21a(vi) with (iv), and (21b(v) with (iv)). Treating the [44] case as an exception which needs some special stipulation, Duanmu (1990) suggests that the whole tone spread in Changzhi suffixed forms can be alternatively analyzed as tonal copying; i.e., the suffixes are considered toneless and get their tones by a tonal copying process which copies the tones of the preceding syllable.

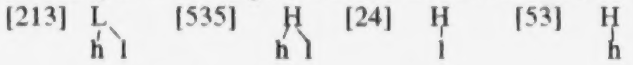
On this issue, Yip (1992) argues against Duanmu's tone copying analysis of the suffixed forms by pointing out the difference in tonal alternations between the suffixed forms and the verbal reduplicates (e.g. (22)). In Yip's view, since the tonal melodies in verbal reduplicates do not seem to be held fixed by a prosodic template, the reduplication process must copy the tones as well as the segments before tone sandhi subsequently occurs. She then questions that if both suffixation and verbal reduplication involve copying the tone from the first syllable, why the suffixed forms and the verbal reduplicates do not exhibit the same tonal alternations. Consequently, Yip concludes that suffixation (as in (21)) involves tonal spread, spreading the whole tone of the first syllable onto the suffix with no further sandhi, whereas verbal reduplication (as in (22)) involves tonal copying, followed by tone sandhi. However, another set of the tonal alternations is noted by Yip, which occurs in disyllabic compounds with the same underlying (or citation) tones (examples listed in (23) below). Along the same line of reasoning, Yip is perplexed by the question why the patterns seen in (23) differ from those in (22), since, in her view, after reduplication the base tones in (22) should be the same as the corresponding forms in (23) and presumably undergo the same sandhi processes.[18] She freely admits that she has no explanataion for the different sandhi alternations seen here.

(23) Disyllabic compounds with the same underlying tones:

a. [kung 213 'male' - t6i 213 'chicken'] --> [213-53] 'rooster'
b. [k'ae 213 'open' - ts'E 213 'car'] --> [35-213] 'to drive'
c. [sE 24 'snake'- y 24 'fish'] --> [24-24] 'eel'
d. [mu 535 'female' - ma 535 'horse'] --> [35-53] 'mare'
e. [t6iO 535 'to wring' - liang 535 'face'] -->[35-535]'to scrape facial hair'
f. [ts'Eu 44 'stinky' - t'ang 44 'charcoal'] --> [53-44] 'smoky charcoal'
g. [t6iEu 53 'old' - fang 53 'cooked rice'] --> [53-53] 'leftover'

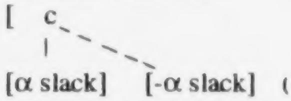
So far no phonological analysis of tone sandhi in Changzhi can be considered satisfactory. Bao (1990: 126-34) has attempted to account for the suffixed forms as a case of tonal spread, and the tone sandhi in the verbal reduplicates by a set of rules, but has ignored cases such as (23). In Bao's analysis of the forms in (22), a number of category-specific and general rules are proposed.[19] We first give Bao's analysis of the underlying representations of Changzhi tones in (24) and the rules proposed for the derivations of the surface tones in verbal reduplicates in (25), followed by some derivations based on Bao's proposal.

(24) Bao's analysis of Changzhi tones (with shorthand modifications):



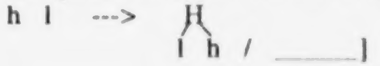
(25) a. Default: [ ] --> [-stiff] (i.e. [ ] --> L)
[ ] --> [-slack] (i.e. [ ] --> h)

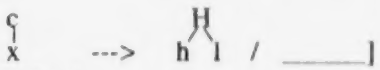
b. Contour formation:



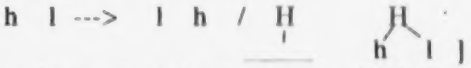
(i.e. h h ---> h l; l l ---> h l)

c. Verbal reduplcation: (with informal simplifications)

(i)


(ii)


(iii) Metathesis:



(26) Derivations of some verbal reduplicates with Bao's rules:

a. [213] (UR: L/h l):
redup. (25ci) (25b)
[21 21] -----> [21 35] -------> [213 35]

b. [53] (UR: H/h):
redup. (25cii) (25b) (25ciii)
[55 55] -----> [55 53] -----> [53 53] -------> [35 53]

c. [44] (UR: unspecified):

(25a) def. redup. (25cii) (25b)

-----------> L . h ------> [33 33] -------> [33 53] -----> [31-53]

According to Bao's analysis, the surface citation tones result from application of contour formation (i.e.(25b)) to the underlying forms in (24) and the application of default rules in the case of [44]. For the sandhi alternations in verbal reduplicates, category-specific rules (25ci, ii) account for the rising tone on the second syllable when the first syllable is [213] and [535], and the falling tone when preceded by [24], [44] and [53]. Except for the sequence [53-53], where a metathesis rule (25ciii) is further needed to give the correct [35-53] pattern, contour formation (25b) accounts for the surface contours of the first syllables.

With regard to Bao's analysis, Duanmu (1990) has pointed out that there is no evidence that [44] is the default tone in Changzhi. Moreover, instead of being explanatory, Bao's category-specific rules (e.g. 25c i-iii) are merely formulated observations. To gain insight into the Changzhi tone sandhi, I state a number of general observations regarding the tonal variations in Changzhi below.

(27) General observations regarding Changzhi:

a. No low initial: No tones in Changzhi start off with an extreme low pitch (e.g. L/l). i.e. * [L

l

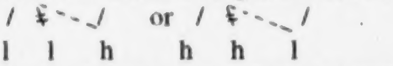
b. No high level final: No high level tone exists prepausally (or at word boundary). i.e. * H]

h h

c. Alternating contour tendency: In the sandhi patterns of disyllabic compounds, tonal alternations seem to be to a large extent motivated by a preference for alternating contours (i.e. falling (h l) followed by rising (l h) or vice versa). i.e. / \ / \

* x y x y

d. Contour forming tendency: For underlying level tones, the surface tone shape seems to be to a large degree determined by the beginning pitch level of the following tone; i.e., a mid tone becomes rising if the following tone starts with a high pitch; a high tone becomes falling if the following tone starts with a low pitch. i.e.



It seems most likely that these observed phenomena are all phonetically motivated. (27a) and (27b) are in accordance with acoustic properties of utterance-initial and utterance-final pitch contours (e.g. Maddieson 1978). I will consider them to be constraints in Changzhi and henceforth refer to them as constraint A (i.e. (27a)) and constraint B (i.e. (27b)). (27c) and (27d), on the other hand, help to maintain a steady alternating contour rhythm and perhaps facilitate ease in articulation.

As for the underlying representations of the Changzhi tones, I consider Bao's stipulation of contour formation (i.e. (25b)) unverifiable and overly abstract. In the analysis which I am to present in (28), I avoid this abstraction and treat the underlying tones to be basically similar to their surface forms.

(28) Reanalysis of Changzhi tones:

```
[213]  L       [535]  H      [24]  H        [44]  L        [53]  H
      / | \          / | \        /  \            |               |
      h l h          h l h        l   h           h               h
```

Instead of proposing a set of unmotivated rules, I consider verbal reduplication to be a tonal copying process which conforms to the conditions set by the template of verbal reduplication.

(29) Template conditions for verbal reduplication: The first syllable bears a contour tone, while the second syllable must be in a high register.

```
i.e.          σ1                σ2
           /       \             |
          x         y            H
```

(30) Verbal reduplication:

a. Copy segments and tones from the first syllable.

b. When more than one toneme is copied, treat the leftmost toneme as extratonal; associate the rest of the tonemes to the moras of the second syllable from left to right, in a one-to-one fashion.

c. Apply constraint B and constraint A wherever applicable.

d. Associate the inserted toneme required by the template for σ_1 from the left, unless otherwise constrained.

In this analysis, the surface tone patterns of the verbal reduplicates are the result of the interaction between the template and the tonal copying process of verbal reduplication, further constrained by the two phonetic constraints in Changzhi (i.e. (27a) and (27b)). The derivations are given below in (31):

(31) Derivation of verbal reduplicates: ((29) + (30))[20]

a. [213] (UR: L/h l h):

```
(30a)   L       L      (30b)+(29)   L        L H
------> / | \          ---------->  / | \      | \ --->  [213-35]
        h l h   h l h               h l h    (h) l h
```

b. [24] (UR: H/l h):

```
(30a)   H       H      (30b)  H      H    (27b)    H     H
------> / \            ------> / \    |    ------>  / \   / : --> [24-53]
        l h     l h            l h  (l) h           l h   h l
```

c. [44] (UR: L/h):

```
(30a) L  L (29)+(30d)   L   H (27b)  L    H   (27a) + (30d)  L          H
----> |    ----------->  :/\  | ----->  /\   | \.--------------> /\         /\
      h  h              l h  h       l h  h  l                h l (*l h) h l
 ---->  [31-53]
```

d. [53] (UR: H/h):

```
(30a)  H     H  (30d)+(29)   H    H    (27b)  H    H
-----> |        ------------> :/\   |    ------> /\   / \.    ---> [35-53]
       h     h               l h  h           l h  h  l
```

As for the disyllabic compounds with the same underlying tones (i.e. cases in (23)), the tonal alternations involve no template but only tone sandhi rules, plus constraints (27a) and (27b). Two rules may be formulated for the observations given in (27c) and (27d); that is, the tendency for alternating contour (27c) suggests a dissimilatory process on adjacent contours, while the tendency for contour formation (27d) points to a pitch assimilation process which creates a contour by allowing pitch spread from the following syllable. In addition to these rules, a register dissimilation process can be seen in (23a, b & f) in which two identical tones of low register are in a sequence. In other words, (23a) and (23b) have undergone a contour alternation process along the lines of (27c) together with a register dissimilation process, while (23f) has undergone a contour formation constrained by no-low-initial (i.e. (27a)), then followed by a register dissimilation. The register dissimilation rule is given below:

> (32) Register dissimilation in Changzhi disyllabic compounds: When two tones in L register are in a sequence, one of them must undergo register-raising.[21] i.e. L L ---> H L
> or L H (with pitch change omitted)

Finally we go back to the suffixed forms of (21a (iv) and b(iv)), of which the tone pattern defies a straightforward spread from the first syllable. Although admittedly I do not have a perfect explanation for this case, I suspect the following process to be at work: after tonal copying, the tone on the suffix undergoes a register dissimilation, the output of which (i.e. a high level tone) then undergoes a contour formation due to constraint B (i.e. (27b)) in the language, eventually giving rise to a surface [535]. I further assume that the reason for (21a (vi) and b(v) not to go through the same processes is due to the "checked" tone involved: i.e., since the tone copied is a reduced, short tone, it does not go through register assimilation nor meet the "high level tone" condition for constraint B to apply. Both hypotheses await further verifications.

Despite the many aspects of Changzhi which remain perplexing, I have shown in this analysis that, contrary to Yip's 1992 claims, it is possible to consider both the suffixed forms and the verbal reduplicates to have undergone tonal copying: the former involves full association of all tones copied, whereas the latter involves only partial association of the tones copied and a template for verbal reduplication. In addition, tone sandhi in disyllabic compounds with identical underlying tones is treated to be entirely different from the verbal reduplication process; i.e., tonal alternations in disyllabic compounds (23) can be accounted for by a number of tone sandhi rules (e.g. register dissimilation and alternating contour), whereas tone sandhi of verbal reduplication is accounted for by an interaction of tonal copying and template, further constrained by (27b & a). Compared with previous analyses, this current analysis has been able to account for the most types of tonal alternations in Changzhi and to offer a more explanatory account which shows the complex tone sandhi exhibited in Changzhi to result from the interaction of a number of prosodic constraints, conditions, and rules.

3. Types of Tone Sandhi in Mandarin Dialects: Summary of Preliminary Findings

3.1. Major types of processes. Despite the insufficient data and the preliminary nature, this study results in some interesting discoveries regarding the tone sandhi processes in the Mandarin dialects. From the foregoing discussions, it is quite obvious that dissimilation is the most powerful process in Mandarin tone sandhi. Following the practice of representing tone by a register and a pitch feature tier (e.g. Yip 1980 and subsequent studies, Bao 1990, Duanmu 1990, and Chang 1992), two major types of dissimilation may be categorized on the basis of the prosodic "level" (i.e. tier or dimension) at which the dissimilation occurs.

First at the register level, dissimilation is present in all four dialect groups. In the BF group, the well-known T3 sandhi in Beijing Mandarin is a classic example in which a L register is dissimilated to a H register when followed by another L tone. In Tianjin, a process comparable to the Beijing T3 sandhi is (2b); in addition, when two high falling tones are in a sequence, register dissimilation applies on the first syllable (as in (2c)). In the XN dialect of Chengdu, the register value of the final syllable is altered to be different from that of the more stressed first syllable. In the JH dialect group, register dissimilation occurs in Zhenjiang when two low falling tones are in a sequence (i.e. (10a)); in Hefei, the high checked tone is dissimilated to low when followed by nonfalling high tones (i.e. (9e)). In the XB dialect group, both of the sandhi processes observed in Xian (i.e. (11)) involve register dissimilation. Finally, register dissimilation is also observed in limited lexical cases in Pingyao (e.g. (19)) and in Changzhi (e.g. (32)) as we have examined in the preceding sections.

Second, pitch dissimilation is also pervasive across all dialect groups. Three types of pitch dissimilaton processes can be concluded for the dialects examined in this study: reassociation of the underlying pitch values, pitch insertion, and contour metathesis.

Reassociation of the underlying pitch values is usually seen when the tone sandhi involves complex contour tones; examples are the T3 sandhi in Beijing and similar processes in Tianjin (2b), Xuzhou (3), Wuhan (7), and Hefei (9a).[22] Pitch insertion is found in Tianjin (i.e. rule (2a)). The third type of pitch dissimilation is contour metathesis, a very productive process in Mandarin dialects, particularly in those of the XB and JH subgroups. Similar to pitch reassociation, the process of contour metathesis involves the delinking of a pitch on the left plus a pitch spread from the right. In the JH group, metathesis is captured by (9c) in Hefei and (10a) in Zhenjiang. In the XB group, both classes of compounds examined in Pingyao require contour metathesis (i.e. (13b) and (17)). Metathesis is also observed in the tendency for alternating contour (27c) in Changzhi and in the sequence of low tones in Xian (11a).

In sharp contrast with dissimilation processes, assimilation in Mandarin has only limited application.[23] The best examples are those of register assimilation in Pingyao (i.e., (13c) and (18)). In addition, the contour forming tendency in Changzhi (27d) may also be considered as a minor assimilatory process.

3.2. Tone sandhi tendencies related to stress, contour shape, and register. Due to the limited data at hand, we have been able to observe only those more obvious cases of stress-tone interaction, leaving open the large extent of this phenomenon for future research. Based on the available sources, the high level tone in Xuzhou reduplicates (in (5)) and the tonal alternations on the final syllables in Chengdu (6) and Kunming (8) are most likely to be due to weak stress. We may further speculate that what motivates the templates for verbal reduplicates in Changzhi (29) and for the triplicates in Xuzhou (4) and the contour simplifications in Zhenjiang (10b,c) and Hefei (9d) in the first place may be stress-related; however, this possibility must await further exporation and another forum to be discussed in.

In terms of contour shape, the complex contour tone has a high tendency to undergo sandhi alternation, as evident in Beijing, Shenyang, Tianjin, Xuzhou, Wuhan, Changzhi, and Hefei examined above. Furthermore, there is a strong tendency for falling tone to undergo the metathesis when followed by another falling tone. With regard to register dissimilation, the majority of cases involve a change of L register to H, although the reverse is also found in a couple of cases (i.e. Chengdu (6b) and Xian (11b)).

To sum up our findings, there is little doubt that the most general sandhi processes in Mandarin are register dissimilation, particularly the dissimilation of L registers, and the simplification of pitch contour, an alternation triggered by complex contour tones of a simplifying nature (e.g. reassociation of the underlying pitch values). In addition, metathesis is a productive process which is observed particularly in the XB and JH dialects.

4. Theoretical Implications

This preliminary study has presented a systematic account of the properties of Mandarin tone sandhi and offered a wider scope of study than that carried out by C. C. Cheng in 1966, one of the very few systematic studies of dialectal sandhi phenomena. Although much of the observation made by Cheng still holds true, the current study has further shed light on the great complexity in the XB dialects and, to some degree, the JH dialects (e.g. metathesis).[24] More importantly, the tone sandhi properties discovered in this study are significant in our understanding of the nature of tone (i.e. the formal relation of tone to other phonological properties) and of the formal properties of a model of tonal representation. We discuss these implications in turn.

4.1. The place of tone in phonology. From the current study, two general theoretical implications can be inferred. First, the predominantly dissimilatory nature of the tone sandhi rules suggests that tone as a phonological property is more like stress (e.g. the dissimilatory nature of "stress clash") than segments in nature. Second, the prevalence of contour metathesis suggests that at some level of phonological representation, the entire contour tone must be taken as a unit, since metathesis always involves the contour as a whole instead of just a single component in the contour.[25] Both implications are crucial in determining the formal status of tone in the organization of phonology. The former raises the question whether a tonal representation should be more similar to that of stress than of "segments" (i.e. in the sense of SPE); in other words, the measure of representing tone simply under a tonal node (regardless of the nature of the node) in feature geometry rather than constructing a tonal structure along the line of metrical tree/grid is questionable.[26] On the other hand, the latter indicates that a higher level of representation, namely the syllable level, may be necessary in the representation of tone, in spite of the relative success of treating contour tones as sequences of tones, of which the tone-bearing unit is the mora (e.g. Duanmu 1990, Yip 1992). This latter implication lends full support to Chang (1992), in which tone is at the same time borne by the mora which is directly built on the slot anchoring the feature geometry with articulatory relevance and by a more dominant syllable level which tonal changes must observe.[27]

4.2. The accountability of the formal model. In addition to aspects discussed above regarding the nature of tonal properties and the level of tonal representation in the overall phonological organization, there is ongoing discussion with regard to the power allowed for a model of tonal representation to predict possible types of processes (e.g. Yip 1989, 1992). The XB dialects of Pingyao and Changzhi examined in Section 2 offer some valuable insight into this issue. First from Bao's (1990) analysis of the Type A (i.e. (13c)), further strengthened by the present analysis of the Type B compounds in Pingyao (i.e. (18)), it is clear that register spread (i.e. assimilation) is a major tonal process for which a tone model must provide account. The process of register spread forces the model to treat tonal register independent of tonal pitch so that as the register value assimilates, the pitch values remain unchanged (contrary to the prediction made by Yip's 1989 model). Second from our discussion of Changzhi, we see that both of the Changzhi suffixed forms (21) and verbal reduplicates (22) can be considered to have undergone a tonal copying process, and since reduplication involves a (segmental) copying process regardless, there is no need to insist on a process of "whole tone" spread for the derivations of reduplicates (cf. Yip 1992). In fact, there is so far no evidence that "whole tone spread" cannot be equally replaced by a tonal copying procedure.

5. Further Issues

In this study I have attempted to look into a number of documented Mandarin dialects in order to better understand the nature of tone sandhi. Although a great deal has been revealed, our analyses of the dialects in question and knowledge of tone sandhi in general must be further amended by more detailed field investigation. As pointed out in 3.2., the likelihood of a prominence-tone interaction needs to be seriously pursued both empirically and theoretically. In addition, empirical questions can be raised as to why the observed tone sandhi tendencies occur the way they do, such as the register dissimilation which occurs when two L-registered tones are contiguous and the contour metathesis when one falling tone is followed by another. I suspect that here both tendencies may have phonetic bases; i.e., it is likely that L register dissimilation is due to perceptual causes, whereas the contour metathesis of falling tones is motivated by timing/duration concerns.[28] Finally as for the theory of tone, I have pointed out some important theoretical implications in Section 4; however, the exact organization of the phonological components involved for tonal representation (including tone features, tone-bearing units, and the prosodic structure) is still unsettled and demands the development of a more articulate, better integrated phonological theory.

NOTES

1. There are, of course, exceptions to this statement. In Chinese languages, the well-known exception is Southern Min which basically involves widespread paradigmatic replacements of tones in grammatical contexts.

2. The following four major dialect groups are generally recognized: Northern (Beifang guanhua; henceforth BF), Northwestern (Xibei guanhua; XB), Southwestern (Xinan guanhua; XN), and Eastern, i.e. the Yangtze and Huai Rivers region (Jianghuai guanhua; JH). For their geographical spans, see Norman (1988) and the summary in Chang (1992).

3. The tonal categories are derived from historical development and used widely in field work to document the citation tones. The data of Xian, Chengdu and Wuhan are from Yuan (1960). Hefei and Yangzhou are from Beijing Daxue's surveys (1964). Pingyao and Changzhi are from Hou (1980, 1983). Tianjin is from Li and Liu (1985). Xuzhou is from Li (1985). Zhenjiang is from Zhang (1985). Note that the tonal category 5 which corresponds with the Qu-sheng category of Middle Chinese is split into two

categories in Changzhi. Tone categories 7 and 8 are the Ru-sheng (checked syllables), of which the tonal duration is relatively abrupt and short.

4. We ignore the domain of the sandhi rule application here for conciseness and also for the convenience of comparison. Beijing T3 sandhi is treated as a register dissimilation rule which changes the low register ([21]) to a high register ([35]) when followed by a low-registered T3 (Chang 1992).

5. Again, for conciseness, the discussion with regard to directionality of tonal domains and extrinsic ordering among these rules are bypassed here. I refer the interested readers to the Chen (1986) and the articles in the special feature of a symposium on Tianjin tone sandhi in the Journal of Chinese Linguistics 15.2.

6. The notation used here in the rule formations is highly abbreviated and informal. H/L and h/l are used as "shorthand" device to indicate the upper and lower register values and the pitch distinctions of a tone; the analysis follows the line of tone feature analysis originated by Yip (1980).

7. This is somewhat reminiscent of many reduplicated forms in Beijing Mandarin in which the second reduplicated syllable or both syllables surface with high level tones and are considered as prosodically weak positions.

8. One may suspect that the template originates from the triplication of the complex tone [213]; moreover, the tonal pattern of (4a) indicates a re-reduplication process from the right. Both may be supported by evidence from other Chinese dialects. The latter is supported by the well-known triplication cases in Taiwanese, whereas the former by the Mandarin spoken in Taiwan, in which there exists a reduplication template [21-35] in baby talk, originating perhaps in the spreading of the complex contour [214] over the disyllables. Due to its complex contour melody and longer duration, a complex tone may be more susceptible than other tones to split up, thus creating a template.

9. The examples here are given in Pinyin. Li (1985) uses Chinese characters to document these examples.

10. I am indebted to Professor Wang Hongjun (p.c.) at Beijing University for providing the updated information of the Lexical Survey.

11. For conciseness in exposition, Bao's rules are rewritten here with "shorthand" notations to avoid the complication of the formalism adopted by Bao, which bears no relevance to our discussion here.

12. In formalizing his observation, Chen follows Yip's 1989 model which takes register to be the tonal root node. The formalism used and the discussion of the formal problems with this rule are omitted here. For details, see Chang (1992).

13. Type A consists of compounds whose components form verb-object or subject-predicate relationships, whereas Type B consists of those whose components form relationships such as adjunct-argument, argument-complement, conjunct (parallel) structure, suffixed noun, reduplicated noun, and reduplicated adjectives (see (49) below for examples). Type C contains reduplicated verbs. All three types exhibit different sandhi patterns from one another. For conciseness, we limit our discussion to the Type B patterns here.

14. Except for a minor difference is noticed between Type B [35-53] and its corresponding Type A pattern [35-423]. The difference may nevertheless be considered a phonetic detail bearing little significance.

15. For the sake of examining whether register neutralization exists in Type B, I hypothesize that the register value of a rising tone is positively correlated with the pitch value of the preceding syllable; i.e., replace the rising tone syllable with a H register value if the preceding tone ends with h, and vice versa. Ill-formed derivations arise when this hypothetical process is applied either followed or preceded by metathesis (17). For a detailed exposition, see Chang (1992).

16. There is a difference in the order in which the register dissimilation rule applies in these two types of compounds. The register-lowering rule applies before metathesis in Type A, whereas L-raising applies after metathesis but before register assimilation in Type B.

17. The fact that the two complex contour tones in Changzhi, [213] and [535], may appear in the first syllable of a disyllabic string is perplexing. It is not clear whether the contours are fully realized phonetically and, if so, whether the syllables bearing them are lengthened. Moreover, [213] and [535] contours are documented for the checked suffix /tE?/ by Hou. Again, the phonetic detail is not available. One may speculate that since, according to Hou, the nominal suffix often takes two forms /tE/ and /tE?/, no glottal ending appears when the suffix bears complex contours. These phonetic details await further verification.

18. Yip's rationale for rejecting tonal copying in (21) and for questioning the differences in tone sandhi between (22) and (23) is ill-conceived. Even if a copying process gives rise to the same base forms, it does not automatically follow that forms from different morphological categories are to undergo the same sandhi. According to the phonological theory conceptualized in lexical phonology, phonological rules have access to lexical/morphological information.

19. As indicated by (25c) below, Bao must also assume a tonal copying process in reduplication; however, he did not make clear how the reduplication process copies tones.

20. Segmental copying is omitted for conciseness.

21. From the limited data given in Hou (1983), it seems that L register dissimilation occurs most regularly when the complex tone [213] is involved. Two patterns are given for the sequence of [213]: [213-53] and [35-213]. It is not entirely clear which pattern is preferred.

22. In the case of Tianjin, if the tone documented as [213] should be treated as [13] as some suggest (e.g. Shi (1990)), then (2b) involves only register dissimilation.

23. This statement, of course, may be argued otherwise because it depends on how assimilation and dissimilation are defined. For instance, if one treats the pitch spread from the left in a metathesis as pitch assimilation, then it would seem that the assimilation processes in Mandarin should also include metathesis and thus are not so limited. However, here in my analysis, although contour tones are taken analytically as sequences of level tones, the entire tonal contour is taken into account as a unit: therefore, a change from falling to rising contour is taken to be a dissimilatory process.

24. In Cheng's study (1966), data from only four dialects were available for analysis. On the basis of Xian, Shenyang, Chengdu and Beijing, he reaches the following conclusions: (1) when two low tones are in a sequence, the first one becomes high rising; (2) when two high falling tones are in a sequence, the first one becomes low falling; (3) except for Chengdu, the sandhi occurs on the first syllable. In the current

study based on a wider source of data, we see that all three points are too simplified to be taken as entirely correct.

25. In addition, the sandhi environments in the JH dialects of Hefei (i.e. (9d & e)) and Zhenjiang (i.e. (10b, c, & d)) also indicate the formation of a natural class based on the shape of the contour (e.g. falling).

26. In addition, if a tone model represents tone only by laryngeal features under the relevant order of feature geometry, then it would not predict and naturally provide an account for the interaction between tone and stress which is represented by metrical structure built upon the skeletal tier (Liberman and Prince 1977 and subsequent works of Prince). However, such prosodic interaction has been observed in Chang (forthcoming), and therefore suggests a more complex view with regard to tonal representation.

27. The tonal structure consisting of a syllable level is able to explain such syllable-observing processes such as metathesis. It also accounts for the phenomena observed in speech errors, such as the anticipation and perseveration of the entire contour tone observed in Thai by Gandour (1976).

28. Presumably L-registered tones tend to have less perceptual saliency than H tones, and falling tones tend to have relatively shorter duration than that of other full tones in Chinese. However, this awaits further verification.

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聲調語言中重音的類型

鄭良偉、曾金金

0. 導言

本文的研究範圍主要是以漢語內部方言重音的表現方式、重音出現的位置，以及重音所扮演的功能，做一系統性的分類。此外，更進一步探討不同語層、方言、以及外語學習時的重音現象。本文所討論的重音類型是否合理、有用，需要看是否能適用於擬構過去的語言歷史變化，以及解釋現在語言間或語層的類型特點的異同。因此，文也以一章節來探討重音的歷史演變。

語言學界一般把自然語言劃分為聲調語言（ tone language ）以及重音語言（ accent language ）。 其中重音語言又可細分為音重重音（ stress-accent ），如：英語，及音高重音（ pitch-accent），如：日語。 如此分類的結果容易產生兩種誤解：一是聲調語言沒有重音；二是以重音語言的角度來分析聲調語言的重音。我們認為採用聲調語言及非聲調語言（ nontone language ）來劃分自然語言可以避免以上的兩種誤解。

本文所指的重音（ accent ）是一種具有標誌語法、詞法、或語音規律的特質。重音在不同的語言裡有不同的表現方式。在日語是以由高音拍降為低音拍來表現，一般把降低之前的高拍視為重音所在。英語則由音節之間的音高、強度、以及長度的差異來表現重音與非重音的區別。在漢語裡，重音主要表現於對聲調的控制。

重音對聲調的影響有五：一）使原有的聲調更加顯著（more prominent），如台語形容詞重疊三連音的頭一音節，尾音必高；二）重音保持原調，中音變調；三）使非重音節喪失聲調對立，也就是漢語一般所謂的輕聲。輕聲又可分為兩種：詞匯輕聲及結構輕聲。詞匯輕聲指的是非結構性詞匯裡有重輕音的區別，如北京話的「認識」，「認」唸重音，「識」唸輕聲。結構輕聲有顯示實詞、弱化虛詞、辨義以及標誌結構的功能。實詞唸重音，虛詞或結構助詞唸輕聲； 五）重音節可向非重音節傳調（ tonal spread ）。本文依上述五種現象在漢語方言分佈的情形，作一說明。【註一】

【註一】本文依袁家驊（1960）的分類，將漢語劃分為七個主要方言區：北方話、吳方言、湘方言、贛方言、客方言、粵方言以及閩方言，其中北方話又分為四個次方言：北方方言、西北方言、西南方言以及江淮方言。

1.0 重音對聲調的影響

1.1 使原有的聲調更加顯著

這個現象在漢語裡並不普遍，我們找到的有：台語形容詞重疊三連音的頭一音節，如「紅紅紅」的第一個「紅」，形容詞重疊三連音的前兩個音節按一般變調的規則變調

，可是頭一音節除了高聲調以外，須再變成高尾音。鄭良偉（1973）解釋這個現象是因為頭一音節是重音所在。

另一個例子是上海話的 [55-31] 變調， 這類變調是上海話變調的一個次要類型。根據 Zhang(1992) 的敘述，除了入聲以外， 不管各音節的調類為何，均變為 [55-31] 。她把這個現象解釋為是受重音在前的影響，而使得第一音節的聲調變得更加顯著，也就是變成高調。

1.2 變調

漢語學者一般將本調視為重音，變調視為中音，有別於輕聲。首先，根據變調的普及性來看，客、粵方言幾乎沒有變調（Hashimoto 1973，Yue-Hashimoto 1987），贛方言的變調現象並不明顯（袁家驊 1960 ），湘和北方話不變調的情形比變調來得普遍。蘇州（吳）方言變調（含輕聲）的情形約佔三分之二（袁家驊 1960 ），閩方言的變調情形最為普遍，在袁家驊（1960）， Yue-Hashimoto (1987)，以及 Norman (1988) 均有提及。因此，根據變調的普遍性，我們可將漢語方言依其變調普遍性排列如 1 ：

1 漢語變調普遍性：閩、 吳 > 湘、北方話、贛 > 粵、客

其次，按照變調的位置來分，北部吳方言的本調多在於語音組的第一音節，而閩方言以及南部吳方言的本調多在於語音組的最後一個音節（Yue-Hashimoto 1987）。北方方言（北方話的北方次方言）裡，徐州方言及北京話較接近閩方言的類型。其他的變調方言則多屬於不規則型， 其變調的位置多受鄰近聲調、 詞法及語法的影響。 侯精一(1985) 指出長治方言（屬北方話的西北次方言），語法結構可影響變調。

第三，就變調所具有的功能來看，由於其普及性以及其相對於語音組的位置，使得變調在台語（閩）具有標誌語法範疇的功能。這得歸功於變調在台語極為普遍又規律，且本調幾乎都固定在主要語法單位的末尾，因此具有相當重要的標誌功能，如 2 ：

2 變調在台語具有標誌語法單位的功能：
ｏ＝變調　　Ｏ＝本調
〔ｏｏｏＯ〕#〔ｏｏｏＯ〕#〔ｏｏｏＯ〕#

1.3 輕聲喪失聲調對立

除了變調，輕聲也反映重音的橫向影響。漢語輕聲失去聲調對立，通常以低調出現，而且容易受到鄰近重音節的聲調影響。輕聲一般可分為詞匯輕聲及結構輕聲兩類。

1.3.1 詞匯輕聲

詞匯輕聲指的是單一詞匯裡有重輕音的區別，如北京話的「糊塗」（Ｏ．），「糊」唸重音，「塗」唸輕聲。詞匯輕聲是北方方言的一大特徵，吳語和贛語也有不少的詞

匯輕聲，其次是湘方言。西北方言、西南方言、以及閩方言僅有極少數的詞匯輕聲，一般出現在表時間的詞尾。如：常德方言（西南方言）「工夫」（O．）的「夫」輕聲，「今年」的「年」、「后日」的「日」、「十二月」的「月」輕聲。閩方言的詞匯輕聲很類似西南方言，如「後日」的「日」、「十二月」的「月」在閩方言裡也輕聲。粤方言和客方言則幾乎沒有詞匯輕聲。

3 漢語詞匯輕聲分佈情形

北方方言、贛、吳 > 湘、西北方言、西南方言、閩 > 粤、客

詞匯輕聲一般出現在詞尾，重輕音的分佈類似英語的前重形(trochee)。

1.3.2 結構輕聲

結構輕聲指的是虛詞或結構助詞唸輕聲，一般包括表示時態、移動方向的標誌語；表結果的補語；疑問詞、語尾助詞、數量語、重疊詞、代名詞以及附加的字首或字尾。粤方言與客方言的結構輕聲現象最不明顯，餘下的方言均有或多或少的結構輕聲。

如：南昌方言（贛）裡名詞詞尾和形容詞重疊詞尾「子」、「里」以及數量語輕聲；長治方言（西北方言）疊音的雙音詞第二音節常讀輕聲；揚州方言（吳）語氣詞輕聲；溫州方言（吳）處所語素 la 輕聲以及人稱代名詞詞頭輕聲，這是我們惟一發現的詞頭輕聲的例子；徐州方言（北方方言）「難不住」的「不」輕聲，在該方言輕聲也導致元音的弱化，這和英語的非重音音節母音弱化（un- stressed vowel reduction）極為類似。

北方方言和西南方言語氣助詞、結構助詞，如「的，了，著」、詞尾「們，麼，子」等輕聲；結構輕聲在台語有辨義的作用，如「驚死」（oO）是動賓結構，意謂「害怕死亡」，而「驚死」（O．）則是動補結構，意謂「因驚嚇而致死」。除此之外，名詞、代詞的詞尾常讀輕聲；趨向動詞、助詞以及表示結果或程度的補語也讀輕聲。

其次，按照結構輕聲的位置來分，除了閩方言的輕聲只出現在語音組末端，其他方言的結構輕聲可出現在非語音組末端，如：北京話「坐著睡」的「著」輕聲，在台語裡「坐咧睏」【坐著睡】的「咧」不可輕聲，「坐咧」的「咧」才可輕聲，因為「坐咧睏」的「咧」不在語音組的末端，所以不輕聲。

1.3.3 詞匯輕聲和結構輕聲的比較

詞匯輕聲是由個別詞匯決定（lexically determined），因此需要個別記憶，記憶負擔大。反之，結構輕聲較易由語法、詞法結構以及虛詞種類或個別的虛詞來預測，記憶負擔較小。詞匯不具有標誌結構的功能，結構輕聲才有。並且由於北方方言及吳方言具有較多的詞匯輕聲，因此結構輕聲在這兩個方言較難顯示標誌結構的功能。反觀贛、西北方言、西南方言和閩方言，結構輕聲豐富而少有詞匯輕聲，因此輕聲能較有效地標誌結構及虛詞。尤其閩語的結構輕聲只能出現在語音組末尾，因此具有較明確的標誌語法範疇分界的功能。

1.4 傳調

傳調指的是重音節可向非重音節傳調（ tonal spread ）。此種現象出現在吳方言和閩方言。 Yue-Hashimoto (1987) 提到兩個吳方言其第一音節的聲調有傳調到後面音節的現象。 台語也有傳調的現象。但是一般調值與傳調調值分得很清楚（鄭良偉 1991）。任何一個可能輕聲的語詞，輕聲時有三種發音。另外大多數輕聲詞，在不同的情形下，可能念為本調，也可能念為變調。因此一個可能輕聲的詞素總共有五種不同的發音的情形，在台語裡相當普遍。

1 一個可能輕聲的語詞的發音變化：

a、唸本調	來。	˨˦
b、在其他聲調之前讀變調	牽來學校。	˧˥ ˧˨˦ ʃ ˧
c、輕聲化失去原來聲調對立時的一般調值	牽來。	˥ ˧·
d、輕聲化時傳調／承調後的調值		
向高平聲調承調而高、輕、長	牽來	˥ ˧·˥
向尾中聲調承調而中、輕、長	走來	˥˧ ˧·→
	行來	˨˦ ˧·→
	kheh來	˧ ˧·→
	lōng來	˧ ˧·→
	théh來	˥ ˧·→
向低降聲調承調時低、輕、短 (與一般輕聲發音同)	送來	˨˩ ˧·

2.0 漢語不同語層的重音現象

本節比較北京話（北方話）及台語（閩）的文言文朗誦，北京話的文言文朗誦沒有輕聲，顯示重音性在不同語層有削弱的現象。詞匯輕聲的減弱性要比結構輕聲來得大，因為詞匯輕聲是由個別詞匯決定，因此需要個別記憶，記憶負擔大。反之，結構輕聲較易由語法、詞法結構以及虛詞種類預測，記憶負擔較小。至於結構重音為何在新起語層有減弱的趨勢，原因可能是重音主要在於橫向的區分，這涉及到較複雜的詞法、語法、及語音組規律，而聲調主要在於縱向區分，一個音節對比有固定的聲調，較容易掌握，如因重音要求變調，或喪失聲調對立，在認詞上要多一層手續，在記憶上也加重負擔。因此在不同的語層，結構重音性趨向減弱，也就是較類似客方言和粵方言。

重音影響減弱的現象也出現在用台語朗誦的文言文。用台語朗誦的文言文有嚴格的變調，但是結構輕聲（如「之、乎、者、也、否）的數量低於台語口語。雖然重音性在不同語層有削弱的現象，但是北京話和台語之間結構重音規律性的差異在不同語層仍然顯現出來。北京話由於結構重音出現位置不定，加上又有詞匯輕聲，因此在文言文的朗誦，為了減輕記憶負擔，因此不輕聲。

文言文的台語朗誦：

1 遵循現代台語有關變調的規律。如：S，NP，VP之後有變調組分界。
2 輕聲很少。較常見的只有「之、者」及句尾語氣詞。
3 在北京話、廣東話這些文言語詞不發音為輕聲。台語的輕聲何時、如何開始是漢語語音史上的重要課題。

文言文的台語朗誦語例：

1a				S		S		S			S	S
b	NP	NP	NP	VP	NP	VP	NP	VP		NP	VP	VP
c	人	之初，	性	本善，	性	相近，	習	相遠。	…	人	不學，	不知義。
d	O	oO	O	oO	O	oO	O	oO		O	oO	ooO

1a			S		S	S
b	NP	NP	VP	NP	VP	VP FP
c	大學	之道，	在明明德。……	學	而時習之	不亦悅乎？
d	oO	oO	oooO	O	ooO.	ooO.
dd			oOoO			

.0 台灣華語中的重音現象

重音性減弱的傾向也表現在方言的學習上，本文主要以台灣華語做為說明。台灣華語指的是台灣人講的北京話，也就是一般所說的國語。

.1 北京話與台灣華語重音類型的比較

台灣華語和北京話的一大差異是台灣華語幾乎沒有詞匯輕聲，如：

1a	行李	東西	風箏	糊塗
b 北京話	O.	O.	O.	O.
c 台灣華語	OO	OO	OO	OO

至於台灣華語的結構輕聲也比北京話來得少。台灣華語只有助詞輕聲，如結構助詞「的」；時態助詞「了、著」；語氣助詞「呢、嗎、吧、啊」等。此外，疊音詞在台灣華語也多半不輕聲，如「叔叔、想想、看看、人人、天天」。疊音動詞中間插進的「一、不」在台灣華語也不輕聲，如「聽一聽」、「走不走」。趨向動詞在台灣華語也不輕聲，如「出去」、「進來」、「跑出去」。名詞後的方位詞在台灣華語也不輕聲，如「地下」、「屋裡」、「頭頂上」、「那邊」。人稱代詞當賓語時在台灣華語也不輕聲，如「請你去」、「找他」。下面語例提供一些北京話、台灣華語和台語結構輕聲的比較

	結構標誌	疊音詞	疊音中插詞	趨向動詞	方位詞	人稱代詞當賓語	數量語當賓語
1a 華語詞	好的	看看	聽一聽	跑出去	屋裡	找他	說二次

b	北京話	O.	O.	O. O	O. .	O.	O.	O. .
c	台灣華語	O.	OO	OOO	OOO	OO	OO	OOO
2a	台語詞	好的	看看咧	聽一下	走出去	厝裡	chhoe伊	講兩遍
b	台語	O.	oO.	O. .	O. .	O.	O.	O. .

其理由類似前述新生語層的重音現象，詞匯輕聲需要逐詞個別記憶，負擔特別重。至於結構輕聲，除了幾個虛詞輕聲以外，連台語必須輕聲的也不輕聲（Cheng 1985）。因此在學習另一聲調語言的重音系統時，輕聲常不出現。台語特有的普及性極高的變調，完全不出現在台灣華語重音系統也是另外一例。

四川人學習普通話（以北京話為主的標準語）也有類似的現象。 梁德曼 （ 1982）提到『輕聲不輕是四川人學普通話時常犯的毛病』。

4.0 台語人士學習日語的重音特徵

本節以台語人士說日語的重音類型來驗證重音在新學得的語言裡傾向固定，理由是為了減少記憶負荷量，而且重音在台語標誌語法單位末尾的功能以及結構輕聲的現象也移轉（transfer）到台灣日語裡。

4.1 日語的重音類型

日語的重音類型被歸類為以音差標示重音（pitch accent）。重輕語音組由一個或一個以上的音拍（mora）組成，每個音拍的長短與強度都大約相同。只在音高上有一定的搭配形式，日本話不以聲調作為縱向的詞匯區分，而是用於橫向的輕重音對比，將語音組內由高變低的高音拍視為重音。沒有這種變化的語音組是平板型，有變化的是降落型。降落型又可分為頭高型和起伏型兩種。重音在第一個音拍的一般稱為頭高型，在第二個音拍或第三個音拍或以後的音拍有音高降落的語音組都叫做起伏型，起伏型的第一個音拍音調較低（台語人士聽起來是中平ㄏ，近第七聲），第二個音拍變高，然後持高到重音音拍之後音高降落。每個降落型，只有一個重音。降落型的重音可在第一音節或其後的任何一個音節。 而這些不同的重音型，在日語可用 0 ， 1 ， 2 ， 3 ， 4 ， 5 ， 6 ，…等標誌，簡單地表示重音的所在，充分地分辨日語的語詞。 在台語裡變調語組（屬於同一主要語法範疇的語詞）也如此，全語詞只有一個不變調的重音節，前面的音節都變調，重音後面的音節都輕聲化。因為一般的語音組只有一個重音，並且一定有一個重音，因此在台灣日語可用 -1 ， -2 ， -3 ， -4 ， -5 ， -6 ，…等標誌表示重音在倒數第幾音拍，充分地分辨重輕音上不同的語詞（請參閱下節語例四）。

4.2 台灣日語與日語的重音類型比較

老一輩的台灣人精通日語的很多。他們所使用的日語有自己的一套重音標誌法，不同於東京日語【注二】。下面是東京日語與台灣日語之間重音類型的比較。【註二：年輕一輩的台灣人，能說流利日語的人不及老一輩的多，但是台語中卻有不少日語移借語。這些移借語中的重音有何特點，有待進一步研究。】

拍數 重音類型		一拍語詞	二拍語詞	三拍語詞	四拍語詞	五拍語詞	六拍或以上的語詞
台日		● ○	● ○ ●	● ○ ● ●	● ● ○ ● ●	● ● ● ○ ● ●	● ● ● ● ○ ● ●
台日	日語	hi#ga	tori#ga	sakura#ga	tomodati#ga	nihoN gami#ga	murasaki 'iro# ga
-2/-1	0	日#が	鳥#が 0	櫻#が 0	友達#が 0	日本髮#が 0	紫色#が 0
-2	01	火#が	花#が 01	男#が 01		お正月#が 01	十一月#が 01
-2	02		雨#が 02	心#が 02	湖#が 02	にわか雨#が 02	あいあいがさ#が 02
-2	03			命#が 03	鶯#が 03	春霞#が 03	たたみおもて#が 03
-2	04				蝙蝠#が 04	おないどし 04	粉おしろい#が 04
-2	05					お月様#が 05	お巡りさん#が 05
-2	06						大神宮#が 06
							reN gou koku #ga 連合國#が
-2				費用 03	特別 02		
-2				加入 0	參加者 02		特別參加費用 02
-3				● ○ ● ●	● ○ ● ● ●	● ● ○ ● ● ●	●●●● ○ ● ● ●
				yuuki# ga	i mo u to#ga	aNnaisyo #ga	saNkasya kai hi#ga
-3				勇氣#が 03	妹#が 01	案內書#が 01	參加者會費#が
-3				參加#が 0			

● 名詞的一拍

○ 助詞的一拍，日語助詞的高低決定於前面的實詞；台灣日語則不一定如此。

0 東京日語裡的平板型 01-06 東京日語裡的重音拍位置

(從語詞末尾算起的數序，此表記法根據『日本音聲學』)

-1--3 台灣日語裡的重音拍位置 (從語詞末尾算起的數序)

橫線上面的語例來自「金田一春彥辭典」。

4.3 台灣日語的重音特點

一、與東京日語重音相同的部分

1. 各個音拍的高低按照日本語的語音特點，並沒有將台語的聲調特點帶進。
2. 各個重音音組的開始，按照東京的規律。第一拍與第二拍的音高一定有變化。
3. 重音因音節結構而遷移 (accent shift) ： a. 長音節的第二個音拍不帶重音，重音移至前一音節。 b. 無聲音節不帶重音。 (台灣日語不一定每一個人都

有無聲音節）

4. 每一個語音組只有一個重音，這也是台語的特點。

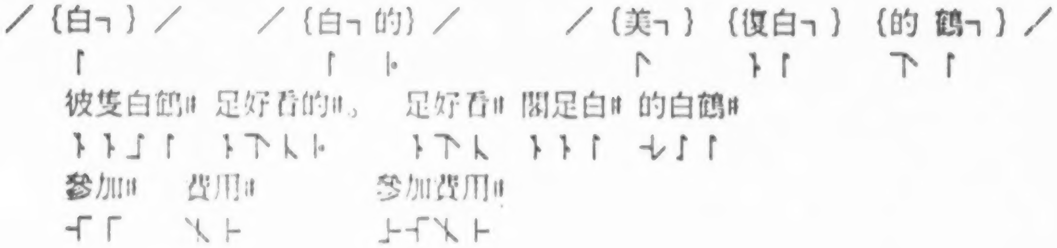
二、與東京日語重音不同的部分

1. 重音固定在倒數第二個音拍（penultimate mora）。（以" -2 "表示），從最後一個非輕聲音拍算起。
2. 但是如果有下面情形之一，就出現在其前面的音拍（antepenult）。
   a. 從後面算起第二個音拍是長音節的第二個音拍時。
   b. 從後面算起第二個音拍是東京日語的無聲音節（ Voiceless vowel ）時。台灣日語的無聲音節只見於較常用的虛詞。
3. 就功能來說，各同拍數的語詞之間，台灣日語的重音只有一型，不像東京日語分為幾個型，因此也就失去分辨詞匯的功能。 -2 型與 -3 型之間的分別，決定於長音節和短音節之間的區別，因此就區分詞匯來說， -3 型可以看成 -2 型的變体，沒有辨詞作用。
4. 重音音組的末尾，一定是低音，第一音拍若是非重音拍則低音。
5. 因為重音音組的末尾，經常是低音，低音就有標誌語音組分界，同時又具有標誌語法單位右分界的功能。
6. 類似台語結構輕聲的語詞，如：さん [saN] 、です [desu] 等則輕聲。

台語與日語之間的輕重音組有三個特點是互相一致的：

1. 一個語音組只有一個重音。
2. 語音組與語法單位的範疇（NP，VP，S）經常一致： 日語的語法單位之左端經常有語音組分界；台語的語法單位之右端經常有語音組分界；語音分界的界定在於是否容許語音停頓。
3. 這個語音組除了語音停頓以外，還經常有語音上的標誌。在日語裡，開端（左分界）經常有語音上的標誌：第一音拍與第二音拍之間高低一定不同。台語裡在末尾（右分界）有語音標誌：有重讀（不變調）或有輕聲語。

有關於第一點與第二點的類似點， 日本語言學泰斗的服部四郎曾經在 1957 "王育德氏『台灣話常用語彙』への序" 提過。在筆者所知範圍內沿用重音的觀點，注意到台灣話的輕重音現象的可能就是他。有趣的是他沿用"重音音素"的觀念，將沒有輕聲詞尾的詞分析為降落型 01 。這是從重音的音節來算各詞的重音型。【註一】。習慣於語詞的本調與變調的人都只注意到變調或聲調的失落。可說揭開了一個新視窗。"／／"內的語詞取自服部教授。


／{白ㄱ}／　／{白ㄱ 的}／　／{美ㄱ} {復白ㄱ} {的 鶴ㄱ}／
彼隻白鶴‖ 足好看的‖。　足好看‖ 閣足白‖ 的白鶴‖
參加‖　費用‖　參加費用‖

【註一：服部四郎 1957 “王育德氏『台灣話常用語彙』への序”。文内鼓勵王教授從事台語重音與語法互動現象的語言學研究。後來為王教授的“台灣語音の歷史の研究”（1987 平山久雄編 ）寫序時也提起這個研究課題。】

日語的平板型是無論後面跟著甚麼語詞都不會有重音。台語的詞匯如果後面有輕聲語，所形成的語詞還是有輕聲末尾。就是後面不跟著輕聲，還是有一個重音，因此台語裡沒有相當於日語平板型（ 0 ）的詞匯。語詞末尾沒有輕聲的語音組以“ 01 ”標誌，有輕聲的即以“ 02, 03, 04,... ”標誌。

4.4 台灣日語重音特點的一些啓示

4.4.1 重輕音的功能、形式配合說

只看重輕音的形式無法解釋台灣日語中介語 (interlanguage) 的現象。也無法解釋為甚麼在台語裡同一虛詞出現在語音組的末尾就輕聲，不然就不輕聲。輕重音所構成的語音單位標誌語法單位的功能，這個語言功能意識在台灣日語裡更加顯著，語法單位的末端，前端都可有語音標誌。在 NP 之後的 case marker，以及 VP 或 S 之後的連接詞（ conjunction ）本來在日本語裡都是跟著前面的後接語，在台灣日語裡由於 NP, VP, S 前後都有分界，這些虛詞性語詞的音高取決於說話者將助詞所組成的詞語音組，表現為單獨的語音組而發音為高音，若是將助詞視為依附前音組的附著語 (enclitic, 以 =1,=2 標誌)，則唸低音，也就是省去前面的語音組分界。這個現象很類似台語裡經常和 S# 結合的句尾否定詞「m̄、無、𣍐、未」按照句法組合結構是單獨形成一個語音組的，但可讀本調，也可以輕聲。輕聲時可看做最表層的語音結構裡這個獨立的虛詞語音組合併於前一語音組。但是其前的分界 #= 有其一定的作用 --- 不影響前面的重音形式。如台語裡：「你 bat 去過無？」的「無」。「無」在【 S# 無 # 】裡讀本調；在【 S#= 無 # 】讀輕聲。此類結構和台語 VP# 後的時態語「啊、咧、過」時態語，以及與 NP#, VP#,S# 後的修飾結構標誌的「的」很類似，都是虛詞單獨形成一個語音組。所不同的是時態語永遠輕聲；「的」除了可能不變調之外，也可能歸併到後面的語音組。

```
                                        NP
                                  ┌───┼───┐
                                  NP   CJ/K   NP            虛詞語音組
                                  man   and   woman         分界取去後的
                               that man 's    child         語音分界與
                                                             重音位置
1)TWL1     :  NP# CJ NP#       查埔兮# 及 查某兮#     1a     -2# -2#
  台語                          ˧ ┌ ⊦   ⟩ ˧ ┌ ⊦       b
                                oO.    o oO.          c
                              彼個查埔人# 的 囝仔#    2a     -1# -1#
                              ooooO o   oO            c
```

2)JPL1 :	#NP CJ # NP	#男 と # 女	1a # 02# NA#
東京日語		LHH L LHH	b
(重音型有0,01..06等)		# あの男 の # 子供	2a # 0 # NA#
		LHHHHH H LHH	b
3)TWL1 JPL2 :	#NP# CJ # NP#	#男 #=と # 女#	1a # -2=1 # -3 #
台灣日語		LHL L # HLL	b
(重音型只有-2,-3)		或 #男 # と# 女#	1a # -2#1 # -3 #
		LHL H HLL	b
		# あの男#=の # 子供#	2a # -2=1 # -2 #
		L HHHL L LHL	b
		或 # あの男# の # 子供#	2a # -2#1 # -2 #
		L HHHL H LHL	b

4.4.2 台灣日語輕重音所顯示的各種力量的對抗與調整

表（一）日語、台語、以及台灣日語的重音位置與功能的比較

語言別	日語 Jpn（目標語）	台語 Tw（母語）	台灣日語Tw-Jpn（中介語）
輕重音的語言功能	區分語匯 標誌語法單位分界	不區分語匯 標誌語法單位分界 弱化虛詞，顯示實詞 分辨不同的語法結構	不區分語匯 標誌語法單位 只限極少數，如さん
語音組標誌方法	開端有明顯的標記	末端有明顯的標記	兩端皆有
重音的位置	不固定在某一音拍	輕聲之前或最後音節	倒數第二音拍
語音與語法的配合	{#NP+K}	{K+NP#}	{#NP#K#}{#NP#=K#}
格標誌語	跟前面的NP合併	跟後面的NP合併	可獨立也可跟前面的NP合併

從上表的比較，我們認為台語人士的語言習慣中輕重音標誌語法單位的意識相當強烈。在中介語裡語法單位的兩端都有明顯的標誌。決定中介語的各種力量雖然十分複雜，但是可以從母語的重音功能，目標語的重音形式得到相當圓滿的解釋：

一. 語音組前面分界一定有語音標誌，這是採用日語的音高規律與標誌語法起端的功能。

二. 語音組後面分界也一定有語音標誌，這就來自台語的標誌語法單位末端功能。
三. NP之後的格標誌語形成獨立的語音組，採用台語的K-NP#，與日語的#NP-K。
四. 虛詞於音組可高可低，都不影響前面實詞的重輕形式。低時在表層語音上應算歸併到前面的語音組，特點採用台語的虛詞語音組。
五. 日語詞匯重音的區別，不出現在台灣日語，原因類似台灣華語沒有詞匯輕聲，都是為了減輕記憶負荷量。

5.0 速度對語音分段的影響與重音標誌語法分段的明確度

台語裡與主要語法範疇 NP，VP，S 配合的變調組分界都不會因速度而改變。 這個特點比華語、日語都更嚴格而明顯。

北京話的輕聲不跟語法分界密切配合，既可出現在詞或詞組的末尾，也可出現在中間，因而也就缺少標誌語法單位的功能。變調組的分界雖然多少受到語法的約束，但是也受到速度的影響。例如下面的北京話例句，相同的句子，卻有幾種不同讀法，不同於台語的變調和輕聲所承擔的語法角色，同一個句子，句法結構的單位分界，始終與變調一致。

		NP	VP			
1a	北京話：	【老李	買好酒】	(*33333)	23 3 23 > 223 23 > 22223	(三種)
2a		【酒	很好】	(*333)	3 23 > 223	(二種)
1b	台語：	老李兮	買好酒	丅 ⺊ ⊦# 丅丅 ⺊		(一種)
2b		酒	真好	⺊ # ⊣ ⺊		(一種)

日語的語法單位雖然較密切地配合語法單位，但是也時常因為速度而有所改變。在日常的會話裡並不一個文節一個文節分開發音，而發音成一個音組。【例語取自金田一春彥“明解日本語アクセント辭典”附 p.67 】

	日語慢速		日語快速	台語慢速與快速
	—— —		————	
3	toriga . naku	>	toriganaku	鳥仔# teh吼
	— ‐┐	>	———┐	
4	tooi . yama	>	too'iyama	遠遠# 的山
	— ‐┐	>	——┐	
5	higa . otiru	>	higaotiru	日頭# 落山
	‐┐ —	>	‐┐	
6	hana . saku	>	hanasaku	花# teh開
	‐—┐ —	>	‐—┐	
7	nagareru . mizu	>	nagarerumizu	teh流# 的水

-┐ -┐ > -┐
8 haruga . kita > harugakita 春天# 到啊。

6.0 重音類型的歷史演變

本文所討論的重音類型是否合理、有用，需要看是否能適用於擬構過去的語言歷史變化，以及解釋現在語言間或語層的類型特點的異同。類似的語音類型出現在不同語族，有其特別的研究價值。 例如東京日語的虛詞音值（ ni，wa，ga，o），決定於實詞的重音類型，台語則有重音節向非重音節傳調的現象。這顯示重音對非重音的影響並不限於同語族或語言接觸才有的現象，而是自然語言中的共同傾向。台語白話字音的韻尾因韻鏡的內、外轉而有不同的發展，，這個特點也見於吳語，此相同點很可能表示兩語有歷史的淵源。台語和日語類似的非重音受重音影響的現象屬於自然語言共同性，這類共同性要比有歷史淵源的語言之間的共同點更有擬構預測語言變化的價值。

本節先探討有關閩南語變調類型的和其他方言的類同點是有歷史上的淵源，還是純粹的各自發展，以及閩南語文白兩個語層不同語言類型特點之間如何調整過，有何語言變化上的意義。

6.1 閩南語變調、重音的搭配與本調、變調易位的歷史過程論

一）有關變調和本調位置的兩個相反看法

A 本調在後論

現代台語的本調在語音組末尾，變調在非末尾，這個看法有幾個有力的根據。一、重音與不變調的搭配原則：重音是受注意的，傾向保持本調。中音是較不受注意的，傾向變調。如將非末尾當做本調就違背重音不變調的原則。二、末尾的聲調對立最多，有七個調。非末尾有不同聲調合一的現象；一般情形對立減為六個調，「仔」前特別變調時，再減為四個調。三、以末尾的聲調來比較現代台灣閩南各方言，能有較整齊的字音對應關係。

B 變調在後論

早期閩南語變調在語音組末尾，其餘非末尾音節皆讀本調，這個看法有幾個有力的根據。

一、漢語一般陽調（濁聲母）低於陰調（清聲母），這是受到濁聲母使聲調降低的影響，可是這個現象在閩南語的語音組末尾正好相反，而語音組其他音節則符合陽低陰高的規律，因此，若把最末音節視為變調，則合乎漢語語音變化起動時陽低陰高的規律（梅祖麟 1970，Pulleyblank 1978 ，平山久雄 1975 李壬癸 199_）。

二、以非末尾的聲調來擬構古閩南語的調值，能合理地解決從古到今各方言的語音變化（鄭再發 1983 ）。

二）本調、變調易位的歷史過程論

我們認為上面兩種不同的看法都有合理的根據。而綜合兩者的推論便是：在閩南語的歷史演變中曾經有變調在後，轉位為本調在後的過程。這裡先就現代語層與語言做共時的比較，然後再做歷時的，縱向的發展擬構。

表 A 各語層、各方言間的語言類型特點比較【註一】

	尾弱類型		尾強類型				
	吳語 前重型	台語 白話層	台語 文言層	文言文 台語朗誦	北京話	文言文 華語朗誦	客語 粵語
A. 音節內部的比較							
1a. 鼻韻尾因內、外轉而分【註二】	+	+	-	-	-	-	-
b. 韻尾容易變化【註三】	-	-	+	+	+	+	-
B. 音組內音節之間的比較							
2a. 組尾重音,非組尾中音	-	+	+	+	+	+	+
(組尾本調,非組尾變調)	-	+	+	+	+	+	+

【註一】 輕聲的發展屬於不同重音種類，不在表A的討論範圍內。

【註二】 吳語和台語白話層鼻韻尾因內外轉而分的對應關係，很可能是有歷史淵源。兩語分裂後，各有其他不同的音變，可是仍然保留這種字音對應關係。

【註三】韻尾容易變指的是中古音韻尾喪失或韻尾對立減少。

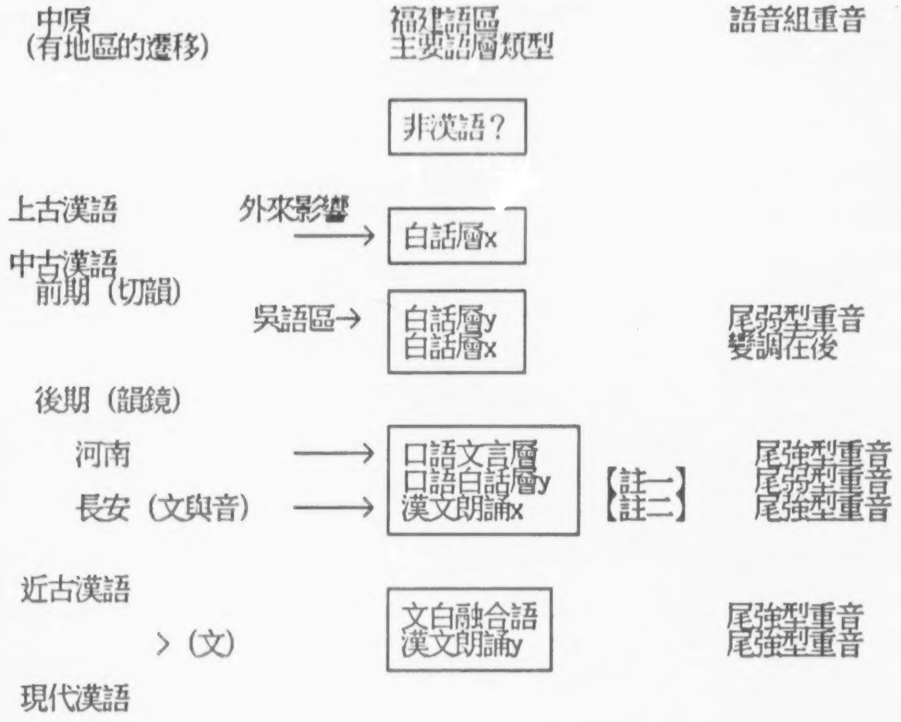
三）本調、變調易位的歷史過程擬構如下：

閩南語變調的起源，來自語詞末尾因句調而引起變化。這個本調在前，變調在後的類型與吳語主要的變調類型一致，可能表示兩語之間有歷史淵源，後來閩語發生本調變調易位，可能是受到尾強型語言移民的影響。

本調、變調易位的類型動因---尾弱型、 尾強型

	音節	音組	句法
尾弱型	韻尾易變	音組尾易變	句法排序中心語在前 (如動詞、時態語、疑問詞在前)
例	三 saN	*Oo；oO.	卡高我／高過我。bat去【曾去】。敢欲去?
尾強型	韻尾不易變	音組尾不易變	句法排序中心語在後 (如動詞、時態語、疑問詞在後)
例	三 sam	oO；ooO.	比我卡高。 去過【曾去】。 欲去無?

表B　本調、變調易位的歷史過程擬構如下：


中原
(有地區的遷移)
福建語區
主要語層類型
語音組重音
非漢語？
上古漢語
外來影響
白話層x
中古漢語
前期（切韻）
吳語區→
白話層y
白話層x
尾弱型重音
變調在後
後期（韻鏡）
河南
長安（文與音）
口語文言層
口語白話層y
漢文朗誦x
【註一】
【註二】
尾強型重音
尾弱型重音
尾強型重音
近古漢語
>（文）
現代漢語
文白融合語
漢文朗誦y
尾強型重音
尾強型重音

註一】口語文言層指來自華北河南光州固始，建立福建王國(909--45 AD)的統治者，語言是尾強型的口語. 白話層y 指當時舊移民的語言類型，仍保持尾弱型重音。

註二】漢文朗誦很可能根據韻書，當時推行文教的決策者來自河[illegible] 衣冠舊族口音不同於當

b) 各語層間的整合原則---各種力量的最有利搭配

閩南語文白兩個語層各有不同的語言類型特點，結合過程，所遵守的原則應該是：效率原則，即以最簡單、省力的方法，取得最好的傳達信息功能。本節比較經過長期整的台語與新取得的台灣華語與台灣日語的重音系統形式與功能，探討整合原則的運作。

一）閩南語文白語層各種類型特點間的互動關係

一個語言各層面中簡單化與功能化的兩種力量，經常不斷地對抗，不斷地取得平衡。這兩股力量在語音、詞匯、詞法、以及句法上的抗衡關係如下：【有關漢語各層面間互動關係的討論，請看Her 1990，Hsieh 1990，Chang,C 1991】

	簡單化的力量	抗拒簡化的力量
1. 語音層面：	容易發音	容易辨音
2. 詞匯層面：	減少記憶量	維持詞匯間的分辨
3. 詞法層面：	詞法形式的簡化	詞法結構間的識別

4. 句法層面：固定語序類型	語序不同的運用，表達主題、語意重點、擬象順序

過去對台語不同語層的詞匯記憶量與語音、詞法、句法特點有一定程度的研究成果。可以就各層面之間的簡化與功能的互動關係做一些描述。下表右欄有關正負面的註解的意義是：

1+ 代表對語音層有正面的影響；	1- 代表對語音層有負面的影響
2+ 代表對詞匯層有正面的影響；	2- 代表對詞匯層有負面的影響
3+ 代表對詞法層有正面的影響；	3- 代表對詞法層有負面的影響
4+ 代表對句法層有正面的影響；	4- 代表對句法層有負面的影響
5+ 代表對語意層有正面的影響；	5- 代表對語意層有負面的影響

一、語音層面：

A. 白話層音節內韻尾的簡化	文白合併後，一音多字。	5-
	一字多音，不利由音分辨詞義	2-
B. 變調	認詞增加負擔	2-
C. 詞匯、詞法單位內都無語音停頓	容易辨認詞匯、詞法單位	2+,3+
D. 輕聲失去聲調對立	┌多音節詞的增加	1-,2-,3-
	│減少同音詞	5+
	│節奏更加旋律化明顯化	1+
	└憑藉重輕音分辨詞義	5+

二、詞匯層面：

A. 文白異讀	一字多音，增加記憶負擔	2-
	文白異讀有區別詞義的作用	5+
B. 有詞匯輕聲 2-	┌同語詞有時輕聲，有時不輕聲	2-
	└憑藉重輕音分辨詞義	5+
C. 無詞匯輕聲	缺少以輕聲區別詞義的作用	5-
	詞匯無須分輕重音，記憶負荷量小	2+
D. 虛詞同一詞類部分輕聲	須個別標誌哪些虛詞輕聲，哪些不輕聲	2-
	顯示實詞，分辨語法結構	4+
E. 虛詞同一詞類全部輕聲	須標誌哪些詞類輕聲，哪些不輕聲	2-
	標誌語法結構	4+
	標誌語意重點的有無	5+

三、句法層面：

A. 單一語序類型	缺乏以語序的變動，表達主題、語意重點的功能	5-
	記憶負荷量小，無須處理不同語序	4+

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B. 變調語音組分界配合語法範疇分界	標誌語法分界	4+
C. 輕聲的出現只在句法詞組末尾	輔助語法分界的標誌	4+

二）各語層間整合程度的比較

就變調與輕聲的各種特點與功能而言，台語的文讀層白讀層，除了保留字音而外，完全整合而運用相同規律。文言文台語朗誦整合的程度相當高，遠高於文言文的華語朗誦，但是仍然沒有完全整合，還有一些一般口語的規律沒有運用。

不同語言類型特點的整合原則：負面影響的同義異形語淘汰，或劃分功能，增加正面影響而共存。

	同一語言			不同語言	
	一般口語場合音系		文教界特別場合音系	雙語人的新重音系統	
	台語白話層	台語文言層	文言文台語朗誦	台灣華語	台灣日語
1a 字音韻尾N、?	+	-	-		
b 文讀音只用於文誦	-	-	+		
2a 因輕聲而失去聲調	+	+	+	+	+ (沒有固定調值)
3 非組尾變調，組尾不變調	+	+	+	+ (少)	
4a 輕聲只出現在末尾	+	+	+	- dT	+
b 重輕音有輔助標界功能	+	+	+ (少)	- dT	+ dJ
5a 重音向輕聲傳調	+	+	-	- dT	
b 虛詞因實詞而變音高	+	+	-	- dT	- dJ
6 輕聲標誌語意重點	+	+	-	-	
7 輕聲標誌結構之分	+	+	-	+ (少)	
8a 虛詞輕聲記憶	+	+	+ (少)	+ (少)	
b 詞類輕聲規律	+	+	+	+	
c 詞匯輕聲記憶	-	-	-	- dP	- dJ

上表dT代表和台語不同，dP代表和北京話不同，dJ代表和東京日語不同。

7.0 結論

本文對漢語的重音類型作一初步的介紹。文中提出為了減少記憶負荷量，在古文朗

本文對漢語的重音類型作一初步的介紹。文中提出為了減少記憶負荷量，在古文朗誦，台語雙語人的華語和日語重音系統上有重音性弱化和固定的趨勢，如北京話（北方話）文言文朗誦沒有輕聲，顯示重音性在新習得的音系中有削弱的現象。此種現象也出現在用台語朗誦的文言文，文言文的學習，主要是師生相傳，因此在處理文言文的語法與詞匯時，與口語整合或第二代自創語法的機會較少，所以結構輕聲也少於台語口語。

台灣日語則顯示重音在中介語傾向固定，理由同前，是為了減少記憶負荷量的壓力，也因為轉移了重音在台語標誌語法單位分界的功能。

由以上的討論，漢語的重音可大致歸為兩類，一是由詞匯主導的重音，如詞匯輕聲，此類重音不規律，多半不出現到中介語；另一類是由語音組配合詞法或語法結構產生的多種重輕音形式，各有特有的功能（標誌語法單位，區分語法結構、標誌語意重點等）。這些功能中，較容易移轉的是以語音組的重音形式標誌語法範疇分界的特點。

就歷史語言學的角度來看，白讀層與文讀層的整合，使語言使用人有很大的詞匯記憶的壓力，但是也給他們很大的選擇的空間，將豐富的結構類型，重新調整，發展不同的具有多種語法、語意功能的重音系統。整合的時間愈長，則由語音組配合詞法或語法結構產生的重輕音區分愈明顯，而由詞匯主導的重音始終保持減弱。但是，在整合的過程中，不同的語音簡化現象，會產生對其他語言層面，如：語音、詞匯、詞法、句法、語意的正面和負面影響，語言變化也就是盡量在增加正面的影響，減少負面的影響兩種力量的平衡下改變。這個效率原則可解釋台語的虛詞輕聲的有限度增加經過詞匯擴散過程，而逐漸產生幾個全組虛詞輕聲。結果是今日台語重音系統（ accent system），記憶負荷量小，卻有很多結構上的功能。反觀台灣華語與台灣日語都是新起的重音系統，放棄記憶負荷量極重的北京話詞匯輕聲或日語的詞匯重音型，也還沒能充分發展，有少許記憶負擔有高度功能的重結構輕聲，卻音系統。至於吳語為甚麼沒有發展成類似台語的重音系統，理由尚待研究。吳語有詞匯輕聲又有結構輕聲，卻不像閩南語那樣輕聲一定出現在語音組末尾，變調有時出現在後、有時出現在前。個此不能產生輔助標誌語法分界的功能。在變調上尾強類型沒有完全地取代過尾弱型的歷史過程，是兩個語群最大的分別。這當然也不能排除不同的歷史上語言接觸模式等社會因素。

本文所討論的重音類型適用於擬構過去的語言歷史變化，以及解釋現在語言間或語層的類型特點的異同，在此提出來供大家參考。

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Cross-Language and Cross-Typological Comparison of Conceptual Representations Related to Grammatical Form

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Introduction.

Psycholinguistic studies of the spontaneous gestures that accompany speech, summarized in McNeill (1992), have shown that the study of gesture is a productive approach to understanding the cognitive processes that underlie speech production. These studies support the thesis that gesture emerges directly from the same underlying unit of thought as speech, without undergoing the linear segmentation required by the socially-constituted linguistic code. Analytic study of speech-accompanying gesture leads to the view that conceptual representations may be idiosyncratic and holistic in the same way gestures are. Further, gesture analysis yields a view of the conceptual representation underlying linguistic form that complements, enlarges upon and can in some particulars contradict a view based on speech alone. As such, the study of gesture offers significant clues to the nature of speakers' underlying conceptual representations as they evolve during speech production.

This research has shown that speakers of languages as diverse as English, Japanese, Georgian, Hebrew, Turkana, Mandarin Chinese and others spontaneously gesticulate when speaking. Speakers of these languages perform highly similar gestures that combine with speech in the same ways for the same referential content. Further, such gesture has been found to function similarly across these languages in important ways. It serves, together with speech, to propel communication forward by marking those elements in evolving conceptual representations that most contrast with preceding elements. Speakers of all languages use gesture iconically and metaphorically. In addition, all speakers use gestural space cohesively to "map", geometrically, the relations among concrete referents and abstractions that play roles in the speakers' conceptual representations.

Traditionally, the vocal speech stream has been the focus of studies of human communication. This linear, segmented, sequential linguistic code has been the primary (sometimes the only) input to the development of models of the human communicative competence that supports language comprehension and language production. Yet human communicative exchanges are richly textured, structured, contextualized and evolving events. The speech stream alone, because of its conventionalized and selective character, necessarily does not reflect many features of whole communicative events. Models of human communicative competence must thus capture patterning at other levels of linguistic and conceptual analysis if they are to adequately describe the way communicative events evolve. The studies described here have involved detailed analyses of speech and gesture and the close relationship between the two. This research permits an expanded, richer view of communicative events by shedding the limiting focus on the sequential speech stream.

Gesture is "so intimately integrated into the production of the spoken utterance that its planning and organization must proceed simultaneously with, if not in advance of, the production of speech itself" (Kendon, 1980). In fact, studies show that gestures almost always precede their co-referring speech, sometimes having their onset during the prior clause. Gestures together with speech reveal the nature and location of the "growth points" of utterances (McNeill, 1992). Similar to Vygotsky's (1986) "psychological predicate", the growth point is the minimal unit of verbal thought that retains the essential properties of the linguistic and imagistic whole of a thought. McNeill has shown that growth points contain the "new" information that the speaker will add to discourse: material that contrasts with what has gone before and that will form the point of departure for the next bundle of information to be conveyed. Linear, segmented, linguistic code is generated through a process of "unpacking" the material contained in these holistic growth points. According to McNeill, gestures embody these growth points and so may be used to identify and investigate them.

Bates and MacWhinney (1991) note that a model of speech production must "account for the process by which native speakers select a set of expressions to convey meaning" in the context of real-time language use, and that the model "must have crosslinguistic generality." A useful way to think about the issues raised by the analytic study of gesture is in terms of Slobin's (1987) proposed dimension of "thinking for speaking." This is the structuring of thought into forms appropriate for linguistic organization. According to Slobin, "'Thinking for speaking' involves picking those characteristics that (a) fit some conceptualization of [an] event and (b) are readily encodable in the language" (1987: 435). Analysis of gesture is a significant tool with which to study how conceptual representations evolve and how they drive speech production. It provides direct evidence about cognitive processes as they relate to speech production in real time.

Comparative cross-language research on gesture examines the interface between conceptualization and language and permits us to distinguish what is universal in the content and structure of conceptual representations from what is influenced by grammatical and typological variations in language form. Typological features of different languages affect the ordering of reference and action in an utterance and languages differ in how readily they encode certain features of a representation. The gestural component of a speech-gesture unit, however, reveals a view of conceptualization not filtered through these selective linguistic forms.

The research presented here explores the nature of the relationship between conceptual representations and linguistic structure by comparing the speech and gesture of native speakers of typologically different languages from two unrelated language families: Mandarin Chinese and English. The speech and gesture of these two groups of speakers are compared in relation to two areas of difference in linguistic form between the two languages.

Study I examines the spoken and gestural expression of verb aspect. Chinese is described as a "classic tenseless language" (Binnick, 1991) but it marks a range of aspectual distinctions grammatically and periphrastically. English marks both tense and aspect, but the two systems are confounded. Also, the expression of aspect in spoken English depends much more on periphrasis and the lexicon than it does in Chinese, which has a set of grammatical morphemes marking the major aspectual distinctions. Study I focuses on three common aspectual distinctions that are each marked by a single-syllable morpheme in Chinese: progressive ZAI, durative -ZHE and perfective -LE and examines the gestures that co-occur with these markers and their analogs in English.

Study II examines the linguistic typological feature of Topic Prominence. Chinese, a "topic prominent" language, differs from a language like English, which is "subject prominent" (Li and Thompson, 1976). As such, Chinese has several very frequently used structures that alter the ordering of reference and action at the sentence level during real-time speech production. The gestures of Chinese and English speakers are examined for clues as to the impact on the level of conceptual representation of such differing patterns of information flow.

METHODS

Subjects.

The subjects are ten native Chinese speakers (two male and eight female) and ten native English speakers (two male and eight female), all adults. Of the Chinese subjects, six are from different regions of Mainland China and four are from Taiwan. The the data from the six Mainland subjects were collected shortly after the subjects came to the United States and all of these subjects were either university students or spouses of students. The four Taiwanese subjects were filmed in Taipei, Taiwan as part of a separate research project. All of the latter were middle class homemakers with small children. The present research assumes that in regard to the grammatical feature of aspect marking and the typological feature of Topic Prominence, all of the subjects are linguistically comparable, even though some of them were first language speakers of some Chinese language other than Mandarin.

The English speakers were all members of the academic community at the University of Chicago.

Stimuli.

Two different types of stimuli were used to elicit speech:

1) Cartoon: This is an American cartoon of a classic and well-known (to Americans) type. It features a cat and a bird and is about 5 minutes in length. It is limited in plot and consists of eight highly action-oriented episodes in which "Sylvester" (the cat) attempts to capture and eat "Tweety" (the bird). Even though it is American, there is in fact very little English language in the cartoon. It has been shown to speakers of many different languages who have little or no knowledge of English, and comprehension of the events and the story line is not impeded by this lack of language knowledge.

2) Vignettes: These are a series of very short action sequences involving small characters or inanimate objects. A set of 40 vignettes was used for this study. Each is about 1.5 seconds long and depicts a character or object performing one or more actions. The vignettes are part of a test battery designed to elicit morphological marking on verbs of motion in signers of American Sign Language (Supalla, Newport, Singleton, Supalla, Metlay & Coulter, in press). The vignettes are designed to be viewed singly in a series, with time after each one for the subject to describe what she has just seen.

Procedure

Elicitation. Subjects viewed the stimuli on videotape, and were then themselves videotaped describing what they had seen to a same-native-language interlocutor. In the case of the cartoon stimuli, subjects narrated to interlocutors who had not previously seen the cartoon. The subjects were instructed to be as complete as possible in their descriptions, so that the interlocutor would then be able to *re*-tell the story to a third person. Twelve of the subjects, six American and six Chinese, viewed the cartoon; the other eight subjects, four Americans and the four Taiwanese Chinese, viewed the vignettes.

All of the vignettes subjects, Chinese and American alike, found the vignettes stimuli somewhat bizarre, but generated a response to each vignette nonetheless. And of the subjects who viewed the cartoon, although Chinese subjects were much less familiar with the characters and conventions of American animated cartoons than were the American subjects, their narratives are quite comparable to the English ones overall.

Speech transcription and gesture coding . From the videotaped responses, detailed transcriptions of all utterances, and the gestures that accompanied them were created. The speech for the Chinese cartoon and movie narrations was transcribed by a native speaker and checked by a fluent non-native speaker of the language. The vignettes data were transcribed initially by a fluent non-native speaker and checked for accuracy by a native speaker. The speech transcriptions include all pauses, breaths, and speech dysfluencies. The speech was coded for grammatical and narrative structure. The gestures were examined frame-by-frame on the videotapes and were coded for form, semantic content, and function in relation to the speech. Representational gestures were flagged. Finally, the timing of the gestures relative to the speech was exactly coded. All gesture coding was evaluated for accuracy by a second trained gesture coder.

The Gesture Data. The gestures that provided the basis for analysis in this study were all "representational" gestures; that is, gestures that iconically represent some physical entity, or metaphorically represent an abstraction. Other gesture types did not figure very significantly in the analysis. Following McNeill (1992), the gestures are taken to consist of three primary phases: 1) *preparation*, when the gesturing hand moves from a rest position, 2) *stroke*, the main representational movement, and 3) *retraction*, when the hand returns to rest. All representational gestures are found to possess at least a stroke phase. Either of the other two phases may be overidden. The stroke is the crucial phase. Kinesically, it's the movement focus of the gesture; semantically, it is where the meaning of the gesture is revealed.

This following excerpt from an English-speaking subject is of an utterance accompanied by a spontaneous gesture. The speech with which the gesture coincides is bracketed and the stroke phase is bolded.

I dunno, [she **slugs** him] or throws him out the window.

In the bracketed gesture, the preparation phase coincides with the word "she." The stroke phase consists of a single, rapid hand movement of the hand starting at the right and moving slightly downward to the left, an iconic gesture representing the action of *slugging*.. The retraction phase is on the word "him."

In addition, gestural holds often occur during the course of a gesture. This is when the gesturing hand pauses momentarily in its motion and then resumes motion. The hand may pause between the preparation and stroke phases or between the stroke and the retraction phases of a gesture, or both, as the following example demonstrates.

[... swings **smack** into the b][uilding ...

In the bracketed gesture here, the underlined portions represent pre-stroke and post-stroke holds. The gesture holds for an instant coincident with the word "swings" before arcing downward across the gesture space in front of the speaker and to the left, an iconic gesture representing the cat swinging on a rope across the space between two buildings. There is another gestural hold before beginning the stroke phase of the next gesture. Kita (1991) determined that such holds are often a phenomenon of the timing relationship between speech and gesture. That is, because speech production is a temporally extended, linear, sequential unpacking process, whereas gesture is executable as a synthetic whole, gesture planning and execution usually precedes speech production. Thus, the preparation phase of a gesture will often begin some time before the co-referring portion of the spoken utterance. In such cases, the gesture may freeze in mid-motion, resuming only when the speaker/gesturer has come to the relevant portion of speech in the speech stream, at which point the semantically rich stroke phase executes concurrently with its co-referring speech form. On the basis of the data from this study I will suggest additional roles for gestural holds that are specifically related to grammatical and semantic features of the languages studied in this research.

Study I: Verb Aspect Marking in Speech and Gesture

First, I will describe the aspectual distinctions that are the focus of this study and then go over how Chinese and English differ with respect to aspect marking.

While verb *tense* indexes the *location* of events in time, past, present or future, verb *aspect* indexes a *view* of events in time. Linguistic research (Comrie, 1981a; Binnick, 1991) indicates that the most fundamental of aspectual distinctions exhibited across all languages that do mark aspect is that between the perfective and imperfective. The perfective is described as taking an external viewpoint on events; the imperfective an internal viewpoint. The present study examines this distinction in speech and gesture as well as a further distinction between two imperfective aspects: progressive and durative. Although the latter terms are sometimes used interchangeably, I will follow Binnick (1991) in characterizing the progressive as *momentary* and the durative as having *temporal extent.* This contrast in imperfective aspects is captured in the following two English sentences:

The comet is coming.	(progressive)
The comet comes ever nearer.	(durative)

The timeline below lays out the distinction between the perfective and the two imperfective aspects. Progressive aspect situates the speaker at a point in the middle of an action in progress and durative lends the sense of an action having some duration, while perfective aspect situates the speaker outside the event, looking on it as a complete entity.

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|------------{------|-----------}----------|-------------------->
I begin to look    I am looking (PROG)     I stop looking    I looked (PERF)

          <--------while looking ... (DUR) ----------->
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As mentioned above, the marking of these three aspects in Chinese is accomplished through a set of three single-syllable morphemes. Progressive ZAI comes directly before the verb:

Tā ZÀI pǎo.
He PROG run.
He is running.

Durative -ZHE and perfective -LE are both post-verbal morphemes. -ZHE immediately follows the verb:

Tā bǎo-ZHE niǎo-lóng pǎo.
He carry DUR birdcage run.
He runs carrying the bird cage.

-LE may either come right after the verb or be placed at the end of the utterance:

Tā jiù pǎo-LE.
He then runs PERF.
Then he runs off.

The progressive in English is grammaticized similarly to Chinese, using the auxiliary "to be" and verb-final "-ing" marker:

He is running.

Durative is less explicit and depends on periphrasis and the presence of certain lexical items. In the speech samples I studied, I took phrases and lexical items such as these to express durativity:

1. "While [As I was..., When..., In the process of...] eating, I choked on some spinach."

2. "With the wife freaking out, the husband takes up with his secretary."
3. VERB + VERB-ing forms such as: run screaming, exit laughing
4. Keep VERB-ing forms: "She keeps wondering when she'll finish her dissertation."
5. Lexical: "skid", "rotate", "deteriorate", "roll"

Perfective is difficult to pin down in English and often an "external view of events" is not unambiguously retrievable from the level of linguistic form. Further, perfectivity is confounded with past tense marking in English. For the purposes of this study I relied on verbs that I judged to have an inherent perfective semantic as well as verb+particle constructions where the particle added perfectivity to the semantic specification of the verb. Compare, for example:

hit	vs.	pummel
eat up	vs.	eat
end	vs.	draw to a close
fall into	vs.	fall

Coding. Several elements of gesture form were coded to provide the basis for the analysis in Study I. The form of the gesture stroke was coded. Stroke phases were coded as being single or multi-stroke. A single stroke is one uninterrupted movement that follows a single trajectory. A multi- or "extendable" stroke is one consisting of some kind of repeating motion that has the potential to continue uninterrupted for any length of time. For this kind of stroke, there is no point at which the stroke necessarily must stop.

The durations of gesture strokes were recorded. The presence and durations of all gestural holds were coded.

In addition, several indices of gestural complexity were coded: whether the gesture was one- or two-handed; if two-handed, whether the hands were "mirror images" of each other or assumed contrasting positions. The presence or absence of the expression of path, trajectory and manner marking relating to the action being gestured was noted. The presence or absence of "item marking" in gestures was noted; that is, I asked the question: Were any features of the items or objects about which the speaker was speaking revealed in the configuration of the gesture? An example of an action gesture that is not item-marked would be the tracing of an imaginary path of motion with the tip of the index finger. Such a gesture could be marked for item if, instead of a point, a balled-up fist (representing a ball, for instance) were to trace the path of motion, instead.

Analysis. Since aspectual distinctions are more simply and clearly marked in Chinese than in English, the data from the Chinese subjects were analyzed first to determine whether any distinct gestural forms coincide with the use of these markers. The American subjects' gestures from analogous speech contexts were then compared to those of the Chinese.

First, aspect marking in speech was examined to determine if subjects tended to prefer one aspectual viewpoint over another or if the stimuli differed in terms of the aspect marking they tended to elicit.

Next, the spontaneous gestures that co-occured with aspect-marked speech were examined. To locate possible differences among the gestures accompanying different verb aspects, all of the utterances in the data set that contained spoken aspect in some form were extracted and a subset of these was analyzed.

The subset to be analyzed was extracted according to the following procedure. First, all the aspect-marked utterances that were accompanied by a *representational* gesture of some sort were extracted. The accompanying gestures were examined and any that seemed to express some portion of the semantic content of the *verb* in the utterance were selected. This selection criterion excluded any gestures that were semantically related *only* to a thing or item being described in the utterance as opposed to the *verb* related to that thing or item. So for instance, if the subject said, "And the bird dropped a bowling ball down the drainpipe", the accompanying gesture might reference only features of the bowling ball and not the dropping. The latter sort of gestures were excluded. Only utterances accompanied by verb-related gestures were retained for the analysis in Study I.

Based on this criterion, 20 *perfectively* marked utterance/gesture pairs and 20 *imperfectively* marked utterance/gesture pairs were extracted at random from the Chinese data, with the criterion of not taking more than five utterances of one type from any one subject. The set of *imperfectively* marked utterance/gesture pairs consisted of ten utterances marked with progressive ZAI and ten marked with durative -ZHE.

To this set of 40 Chinese utterance/gesture pairs was added an analogous set from the English data set. A subset of all utterance/gesture pairs from the English data set was extracted according to the same criteria described above for the Chinese data. There is some difficulty, though, in judging the spoken aspect of some of the utterances in English, since, with the exception of the progressive, aspect is not unambiguously marked, as was outlined above. To extract appropriate samples, I relied on lexical semantics for the perfective and to some extent for the durative, although for the durative I was aided by key words and phrases that denote durativity (e.g. "while", "as", and so on). Nevertheless, it is often difficult to judge aspectual content from linguistic form alone in English.

Results. The speech data are examined first. Across the Chinese speakers, use of the -LE perfective aspect marker was more than twice as common as the two imperfective markers combined, and within the perfective, the durative -ZHE marker was somewhat more common than the progressive ZAI marker. However, some speakers showed a marked preference for framing their responses in one aspect over another.

Interestingly, the choice of aspect marking in speech for both groups of speakers was found to be largely independent of the particular stimulus being described. This was particularly clear in the data from the vignettes, where a given vignette might elicit responses from different subjects framed in terms of either perfective or imperfective aspects.

The gesture data were analyzed next. Analysis of the gestures in the extracted set of 80 Chinese and English utterance/gesture pairs shows that there were differences in timing and form of gestures related to aspect marking in the speech.

First, there was a difference in gesture stroke durations between the perfectively and the imperfectively marked speech contexts. The gestures coinciding with perfective marking in speech were much *shorter* than those coinciding with the imperfective.

Table 1A. CHINESE
Mean gesture stroke durations in msecs.: perfective/imperfective

Perfective: mean = .22 std.dev. = .111

Imperfective: mean = .707 std.dev. = .442

(p < .0001, significant)

Table 1B. ENGLISH
Mean gesture stroke durations in msecs.: perfective/imperfective

Perfective: mean = .275 std.dev.= .149

Imperfective: mean = .580 std.dev. = .502

(p < .013, significant)

Tables 1A and 1B show the mean stroke duration of gestures accompanying spoken perfective and imperfective aspects in Chinese and English. Within each language the difference in the mean values of stroke durations of gestures marking these aspectual distinctions was highly statistically significant. A two-way analysis of variance comparing these stroke durations in the two languages yielded a significant effect for aspect (p < .0001) and no effect for language.

Tables 2A and 2B show the mean gesture stroke durations for the gestures accompanying spoken progressive and durative, the two imperfective aspects. This difference in stroke duration was not statistically significant for either language.

Table 2A. CHINESE
Mean gesture stroke durations in msecs.: progressive/durative

Progressive: mean = .819 std.dev. = .497

Durative: mean = .596 std.dev. = .372

(p < .2706, not significant)

Table 2B. ENGLISH
Mean gesture stroke durations in msecs.: progressive/durative

Progressive: mean = .679 std.dev. = .590

Durative: mean = .480 std.dev. = .401

(p < .3899, not significant)

Note that the difference in gesture duration between the perfective and imperfective speech contexts in Chinese cannot be explained by differences in the durations of the accompanying spoken utterances. Since all three of the Chinese aspect markers studied are single-syllable morphemes accompanying the verb, they all require approximately the same amount of time to utter. As for the English, if duration of the accompanying spoken utterance were a factor in stroke duration, we might expect that durative, which is often periphrastic, would take the longest time to utter and generate longer stroke durations as a result. In fact, stroke durations for gestures accompanying duratively marked speech in English are shorter on average than for the progressive, just as in the case of Chinese.

These results, then, point to a quantitative difference in gesture forms. More striking perhaps than the differences in stroke duration are the *qualitative* differences in gesture forms that accompany spoken aspect. All of the 40 gestures accompanying spoken perfective aspect in Chinese and English used in this analysis were single stroke gestures. The gestures typically were very simple in form. More often than not they marked only the *trajectory* of some falling or flying object. In contrast, 85% of gestures accompanying spoken progressive aspect were multi-stroke or "extendable" gestures. These gestures are often marked for manner and path of movement. For example, one subject's utterance in response to a vignette,

A m[an **is rolling across the** screen.]

is acompanied by a gesture in which the forearm, representing the body of a toy man, loops across the subject's gesture space in a path and manner similar to that of the figure seen in the vignette.

Finally, as for the gestures that occurred in the presence of duratively marked speech, what was most notable was a sustained quality of the gesture, either in a lengthened stroke phase or in a long hold phase that might extend over more than one spoken clause.

Table 3 provides a comprehensive look at the qualitative differences among the gestural forms that accompany the different spoken aspects. In this table, two different types of holds are distinguished. Here the holds that Kita (1991) identified are referred to as "syntactic holds", because these holds "wait for speech to catch up"; that is, the timing of their execution is dependent on the syntax of an utterance. Whereas the holds that occur with the duratively marked utterances are of a different kind. The holds in these gestures seem to have something to do with the semantic content of the verb itself and so they are referred to as "semantic holds". Such gestural holds are found to extend beyond any kind of distinct syntactic boundary and as such do not share the same timing relationship with utterance structure that Kita observed for the syntactic holds.

Table 3A. CHINESE & ENGLISH
Qualitative differences in gesture form in differing spoken aspect contexts.

PERFECTIVE	PROGRESSIVE	DURATIVE
single stroke	**multi-stroke**	
syntactic holds	**syntactic holds**	**semantic holds**
low complexity:	**medium complexity:**	**high complexity:**
1 event	1 event	2 or more events
1 or 2-handed	1 or 2-handed	2-handed
mirror-hand gestures	mirror-hand gestures	contrast gestures
least manner marking	*most* manner marking	
brief trajectory marking	path marking	
little item marking	little item marking	item marking

The last feature that distinguishes the gestures coinciding with different aspect marking in speech is gestural complexity. I note that the gestures that accompanied the perfective tended to deal only with one event. They may be one or two-handed, but if two-handed, the hands typically are mirror images of one another; for example, as in two hands together suggesting the shape of a bowling ball. Perfective has the *least* manner marking of all the types of gesture. It tends to mark just trajectory rather than full path, and item marking is infrequent.

The progressive gestures, as with the perfective, typically describe just one event and if both hands are used, the hands are mirror images. Progressive aspect marking in speech comes packaged together with the *most* manner and path marking in gesture. And again, as with perfective, there is overall little item marking.

While the primary thing that distinguished the gestures accompanying duratively marked speech is the occurence of semantic holds, these gestures also exhibited a higher degree of complexity. They often depicted two or more events, which is understandable in light of the semantics of durativity: there often is a background action with a foregrounded action taking place concurrently. When there is durative marking in the accompanying speech, there is more of a tendency for two-handed gestures to occur than is true in the presence of the other two aspect markers, and when the gestures are two-handed, the hands are often contrasting, rather than mirror images of one another. That is, one hand will represent one function, the other hand another, and the two stand in relation to each other somehow. Further, item-marking is very common in gestures that coincide with the durative in speech. Overall, there seems to be a more extensive and more cohesive use of gesture space in these gestures.

Discussion. Conceptual representation of verb aspect during real-time language production appears unaffected by differences between languages in spoken aspect marking. The results presented here lend support to the thesis that, at least in some respects, conceptual representations, as indexed by gestural forms, develop independently of specific linguistic forms.

Study II: Topic Prominence and Gesture :

Within the spoken utterance, typological features of different languages such as standard word order and topic prominence affect the flow of information. Mandarin Chinese and English differ on the linguistic-typological dimension of topic prominence (Li and Thompson, 1976). This is determined by the preponderance of certain types of utterance structures in the two langages. Study II presents another test of the potential of using gesture analysis as a tool to gain access to the level of conceptual representation. It is hypothesized that topic prominence features in Chinese, expressed in topic/comment and various object-fronting utterance structures, may focus the attention of native Chinese speakers on isolable elements at the level of conceptual representation, and on a consistent separation of elements from process rather than a unification of elements and process.

English has a basic SVO utterance structure (Comrie, 1981b) and Chinese is usually also categorized as an SVO language. Li and Thompson (1981) maintain, however, that Chinese is better viewed as unclassifiable relative to this linguistic typological feature, since the subject/predicate relations on which such a categorization is based in other languages are such tenous factors in Chinese grammar. Speakers of the language though, certainly have access to this basic word order pattern.

More significant is the fact that Chinese is a topic prominent language, with several commonly used structures that alter the ordering of reference and action. These include the object fronting BA construction, the resultative and directional verb compounds (RVC and DVC) with which it often occurs, and topic/comment structures. Of these, English makes available the topic/comment option as well, however it is not used with any frequency as it is in Chinese. By way of illustration, in all of the English-language data examined for this study, there was only one instance of a topic/comment structure. Following are some examples of utterance structures that were used in this analysis. In the first example, the BA construction moves the direct object into a position in front of the verb, in this case a DVC:

Tā BǍ qiú diào-xià-qu.
He OBJ ball threw-down-go
He threw the ball down.

In a topic/comment structure, any grammatical element of the sentence, or elements not grammatically related to the sentence may appear in utterance-initial position:

Nèi xiáo niǎo, māo qiáng-dào shǒu.
That little bird, cat grabs-to-hand.
Now that bird, the cat grabs him.

Data. The analysis for Study II is based on a total of 120 utterance/gesture pairs from the Chinese and English-speaking subjects. From the Chinese narratives, 60 single clause utterances that co-occurred with representational gestures were selected. Thirty of these were standard SVO utterances, and thirty were non-SVO utterances. Of the latter, sixteen utterances contained BA-constructions, thirteen were topic/comment utterances, and two were other object fronting utterances. The selection was not balanced across subjects, although several utterance/gesture samples were taken from every subject. The goal was to find the samples of the target utterance structures that were accompanied by reliably codable representational gestures.

Then, 60 single-clause utterance/gesture pairs were selected from the English narratives, controlling for equivalent or closely equivalent informational content to those selected from the Chinese narratives. All of these were SVO utterances, since, as mentioned above, there was only one non-SVO utterance in the corpus.

Analysis. The gesture from each utterance/gesture pair was analyzed as belonging to one of these three categories:

1) *Item only* gestures encoded only features of some item or object in the discourse context; for instance, the shape of a bird cage or the extent of a wire.

2) *Action only* gestures encoded only features of an action; for instance, the trajectory, path or manner of a movement.

3) *Incorporating* gestures encoded features of both items and actions in the discourse context. A portion of the gestures in this category were termed "total enactment" gestures since they encoded features of an item, action and character. The gestures included in this latter sub-category were those in which the subject actually pantomimed the action being described.

Results. First, the overall number of gestures in both the English and Chinese utterances that encoded Item Only, Action Only, and Item and Action Incorporated were counted. Table 4 shows that the total number of gestures is greater than the number of utterances for both English and Chinese. This is simply because some of the utterances contained more than one representational gesture. Considering the numbers as a proportion of total gestures, it's clear that there are differences between the English and Chinese gesture production both for Item Only gestures, and Incorporated gestures. The largest difference is for the Item Only category, with only six gestures in the English sample of this category, compared to thirty-one gestures in the Chinese sample.

Table 4. GESTURE CONTENT: ENGLISH vs. CHINESE: All utterance types

	ITEM ONLY	ACT ONLY	ITEM & ACT INCORPORATED	TOTAL GESTURES
ENGLISH	**6**	**16**	**43**	**65**
PERCENT	9%	25%	66%	
CHINESE	**31**	**12**	**30**	**73**
PERCENT	42%	16%	41%	

Table 5 compares the two Chinese sentence types studied: SVO and non-SVO. It appears that there is no effect of sentence type on feature encoding in gesture. Item Only gestures seem just as likely to occur in SVO sentences as non-SVO sentences.

Table 5. GESTURE CONTENT: CHINESE SVO vs. NON-SVO

	ITEM ONLY	ACT ONLY	ITEM & ACT INCORPORATED	TOTAL GESTURES
SVO	**15**	**4**	**13**	**32**
PERCENT	47%	13%	41%	
non-SVO	**16**	**8**	**17**	**41**
PERCENT	39%	20%	41%	

Table 6 is based on all 120 utterance/gesture pairs and breaks down the data on just the incorporated gestures into three categories reflecting encoding of features of the different syntactic categories: gestures that incorporate features of the direct object of the verb, gestures that incorporate features of a subject, and those that incorporate features of both subject and object. Though the numbers are small, here the Chinese show a stronger tendency than Americans to selectively incorporate object features in their action gestures. Notice also that Americans are more than two times as likely to produce total enactment gestures, the whole-body pantomimics that are the most extreme form of incorporation.

TABLE 6. INCORPORATED GESTURES ONLY: ENGLISH vs. CHINESE

	OBJECT + ACTION	OBJECT + ACTION	SUBJ.& OBJ. + ACTION	TOTAL GESTURES
ENGLISH	**3**	**12**	**28**	**43**
PERCENT	7%	28%	65%	
CHINESE	**9**	**10**	**11**	**30**
PERCENT	30%	33%	37%	

The final table, Table 7, displays the same counts as Table 6, but comparing across the two categories of Chinese sentence. These are the smallest numbers yet, since the Chinese speakers didn't produced that many Incorporated gestures. Here the patterns of feature encoding in the SVO and non-SVO sentences are mirror images of one another. The action gestures accompanying SVO syntax are more likely to incorporate subject features, whereas the action gestures accompanying non-SVO sentences are more likely to incorporate object features.

Table 7. INCORPORATED GESTURES ONLY: CHINESE: SVO vs. non-SVO

	OBJECT + ACTION	SUBJECT + ACTION	SUBJ.& OBJ. + ACTION	TOTAL
SVO	**1**	**8**	**4**	**13**
PERCENT	8%	62%	31%	
non-SVO	**8**	**2**	**7**	**17**
PERCENT	47%	12%	41%	

Discussion. The results reported above are generally consistent with the hypothesis that the topic prominence feature of Chinese may increase the salience of topics and objects of actions for speakers of that language, causing them to produce Item Only gestures that encode features of syntactic objects and utterance topics in higher proportion than English speakers. Interestingly, as the results displayed in Table 5 comparing SVO and non-SVO utterance structures indicate, this pattern of gesture appears *not* to be conditioned sentential syntax, since Item Only gestures are no more likely in the context of non-SVO utterances. This suggests that these gestures reveal a general patterning on the level of conceptual representation rather than a pattern of syntactic thinking emerging in the gesture channel during speaking under the control of the linguistic code.

Representational gestures of the sort defined here provide clues to how speakers sort out and organize the domain of referents during real-time speech production. These and other observations suggest that some features of linguistic structure do emerge in gesture.

General Discussion.

Cross-language research into these phenomena provides a means of determining the extent to which conceptualization is related to linguistic representation in such areas of grammatical difference between languages. Since languages differ in how readily they encode certain features of a conceptual representation, spoken utterances in different languages will differ in the features they select or highlight. The gestural component of a speech-gesture unit, however, reveals a view of conceptualization that has not been filtered by these linguistic forms.

The research presented in Study I lends support to the thesis that, in some respects, conceptual representations develop independently of specific linguistic forms in real-time speech production. However Study II revealed what appears to be an area where features of conceptual representations do correlate with differences in linguistic form. The Chinese speakers show a preponderance of item-marking gestures over action-marking gestures relative to the English speakers, suggesting a privileged role of isolable entities in the conceptual representations of the Chinese.

There may therefore be areas of conceptual representation with which linguistic representation does not interfere, as appears to be the case case with aspectual distinctions, as outlined above. These may be cognitive universals. There may exist other areas, however, where linguistic forms do influence developing conceptual representations, at least in the context of on-line speech production. The analytic study of gesture is a methodology that may profitably be used to examine this kind of "thinking for speaking."

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西夏語音韻轉換的起源——重疊複合詞
(西夏語韻母系統擬測之一)

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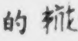
一、引　言

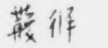
西夏語是屬於漢藏語系藏緬語族的語言，漢藏語系語言中保存古代文字記錄的語言並不多，而西夏語則因有十一、二世紀的文獻資料而在漢藏比較語言學中佔有重要的地位。

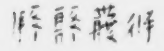
然而由於西夏語係以類似漢字的表意文字書寫，要利用西夏語的資料作比較研究，必須從西夏語音的構擬著手。西夏語音的構擬至今已有多種研究出版，但因各家擬音差異很大，要進一步以構擬的語音作比較研究的基礎，必須先解決西夏語內部的問題。西夏語音韻轉換的研究旨在打破西夏語音構擬上的瓶頸，希望打破從來主要依賴對音資料的僵局，加入一些新的材料，使擬音的基礎更爲穩固。

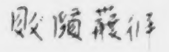
隨著研究音韻轉換現象的進展，西夏語韻與韻之間的關係也逐漸清楚，西夏音韻系統也逐漸清晰，然而始終難以克服的問題是在有音韻轉換現象之幾種語詞之間，究竟如何決定何者爲原來的（即基式 base form），何者爲後起的（即衍生式 derived form），作漢藏語比較研究時須以西夏語最古的詞形爲基礎，因此決定西夏語多種詞形中何者爲原來的形式，成爲漢藏比較語言學首先必須解決的問題，茲舉二例以明其間的關係。

西夏語中與漢語「死」（上古音 *sjid）、藏語 'chi < 'sji, shi < *sji 及緬甸語 se < *sij，同源的詞共有二字，一爲平聲三十韻的  sji 字，另一個是上聲十韻的 sji，檢查西夏語此二字的用法也難以獲得任何線索，只能查知此二字出現的環境如下：

sji 2.10 「死、亡、歿、喪」

 已死

 親屬亡歿 (Nevsky 1960: I -418)

 遠喪他國(Nevsky 1960: I -405)

[illegible] sji 1.30 「死、歿」

[illegible] 不死

[illegible] 死屍

[illegible] 死地

[illegible] 死生

[illegible] 退歿 (Nevsky 1960: I -387)

從 Nevsky 的西夏辭典只能辨認上面第一個字（[illegible]）出現在表示完成貌的詞頭 [illegible] 之後，可確認是作動詞用，而第二個字（[illegible]）則除了作動詞外，尚可作形容詞及名詞，在這種情形下實無法決定該引用何者作比較研究之用。

再舉另外一個例子，西夏語中與漢語「薪」（上古音 *sjin）、藏語 shing <*sjing「樹」及緬甸語 sac < *sik「木材」同源的也有二字，其字義與詞例如下：

[illegible] sji 1.11 「木、樹、材、薪」

[illegible] 木植

[illegible] 木匠

[illegible] 果木

[illegible] 樹

[illegible] 拾薪、採薪 (Nevsky 1960: I -478)

[illegible]（《文海》17.232）[1]
木 者 木 也 草 樹 也 木 種 種 之 名 是 也

[illegible] sji 1.30 「草木」

[illegible] 草木

[illegible] 菜蔬 (Nevsky 1960: I -487)

[illegible]（《文海》39.123）
木 者 樹 草 也 木 草 種 種 之 名 是

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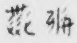
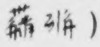
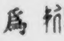
[1] 《文海》後面的號碼係依《文海研究》所用方式標示出處，例如：17.232 表示第17頁，第2面，第3行，第2字。

從對譯資料及《文海》注釋不難看出二者幾乎同義（例如「草木」既可寫做 ，又可寫做 ），然而究竟應以何者爲比較研究的基礎，也是找不到決定的方法。

但是若把以上二例合起來看，便立刻可以發現此二組字是依據一定的規律對應，因爲  sji「死」與 sji「木」是西夏同音字，而 sji「死」與 sji「木」雖然聲調不同，聲母與韻母都是相同的。

按西夏語平聲有九十七韻，上聲有八十六韻，平上相配共得一〇五韻，上面的轉換現象即發生在平上相配所得綜合韻第十一韻（以R.11表示），包含平聲第十一韻（以1.10表示）及上聲第十韻（以2.10表示）以及綜合韻第三十一韻(R.31)包含平聲第三十韻(1.30)及上聲第二十八韻(2.28)，爲清楚起見圖示如下：

R.11 [1.11-2.10] -ji ——— R.31 [1.30-2.28] -ji

sji「死」 sji「死」

sji「薪、樹木」 sji「草木」

二、音韻轉換現象的研究

西夏語音韻轉換的現象，我在過去幾篇論文(Gong 1988, 1989, 龔 1993)中曾陸續作了探討，茲將過去的研究中與本文有關，且須作本文進一步探討的基礎的部份，簡要說明如下：

2.1 在西夏一〇五韻中，第八韻至第十四韻與第三十四韻至第四十韻之間有成系統的音韻轉換現象（其中第十二韻與第三十韻之間未發現字例），而第十韻與第十一韻以及第三十六韻與第三十七韻韻母相同(Gong 1989:20-26)。

2.2 另外在第十、十一韻，第三十六、三十七韻與第三十、三十一韻之間有音韻轉換現象（其中第三十韻與第三十一韻韻母相同，參看 Gong 1993:947-952），我用Ａ、Ｂ、Ｃ分別指此三類。

另外也發現Ａ、Ｂ、Ｃ三類韻母在「同源複合詞」構詞法中其結合有一定的限制，Ｂ可以與Ａ及Ｃ結合，而成爲複合詞，而其結合的次序是Ｂ在前，Ａ與Ｃ在後（即ＢＡ與ＢＣ）。Ａ與Ｃ都可以單獨出現，它們不能結合成複合詞。

2.3 在去年第二十六屆國際漢藏語言學會中，我曾提出西夏語韻母分三等，而元音分長短的假設(Gong 1994)，認爲西夏韻書排列韻的次序是依一、二、三等的次序，短元音在前，長元音在後，音韻轉換只發生在同等同長短的元音之間。

綜合上面(2.1, 2.2及2.3)的說明，這些音韻轉換的現象可列成表如下：

	A		B		C	
短元音一等韻	R.8 [1.8-2.7]	e			R.34 [1.33-2.30]	ej
短元音二等韻	R.9 [1.9-2.8]	ie			R.35 [1.34-2.31]	iej
短元音三等韻	R.10 [1.10-2.9]	ji	R.30 [1.29-2.27]	jɨ	R.36 [1.35-2.32]	jij
	R.11 [1.11-2.10]	ji	R.31 [1.30-2.28]	jɨ	R.37 [1.36-2.33]	jij
長元音一等韻	R.12 [1.12-2.11]	ee			R.38 [1.37-2.34]	eej
長元音二等韻	R.13 [1.13]	iee			R.39 [1.38]	ieej
長元音三等韻	R.14 [1.14-2.12]	jii			R.40 [1.39-2.35]	jiij

本文引言中所提的R.11 sji「死」、 sji「木、薪」、R.31 sjɨ「死」、 sjɨ「草木」，在上面的架構中即屬於A類韻母與B類韻母的轉換。

三、三系列韻母成系統的轉換

現在把過去研究的結果總結起來，我們便可以繼續作如下的預測，即：如果西夏語音韻轉換的規律正如我們所預測，且如果西夏韻書排列韻的次序也正如我們的預測，那麼B類韻母系列也應依序與A、C類對應，且可以發現B類與A類及C類之間有同源的語詞，而這些同源詞如果形成同源複合詞，也必定是依BA、BC的次序。

實際查証的結果印証了上面之推測。

3.1 短元音一等韻之間的轉換

依排列的次序推測，與R.8及R.34對應的B類韻應是R.28〔1.27-2.25〕ə。果然不出所料在R.28中找到五組轉換的例子。

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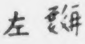
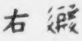
a) R.28 與 R.8

R.28 lhə 1.27 *卷[2](S.4764)[3]
R.8 lhe 1.8 *縮(S.5551)

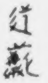
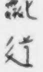
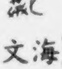
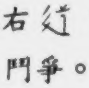
《文海》(W.2856, W.2857)[4] lhə-lhe 二字連用，其義爲「*攣縮」，參看《文海研究》雜 12.141及雜 12.142。

R.28 ldə 2.25 相撲(S.3408)《同音》(49B6)注左  lde
R.8 lde 2.7 相撲(S.4873)《同音》(52B3)注右  ldə

《文海》(W.1754, W.2149) ldə-lde 二字連用，其義爲「相撲、打鬥」。

上面兩組同源詞中第一組由《文海》的注解明顯可看出二字連用且B(R.28)在前，A(R.8)在後。至於第二組，則除了《同音》的注字及《文海》的注解外，還有文獻資料（Nevsky 1960:II-60，《類林》346-4）都顯示二字連用，也是B在前，A在後。

b) R.28 與 R.34

R.28  ɣwə 1.27 鬥(S.3635) 《同音》(42B4)注左  ɣwej
R.34  ɣwej 1.33 鬥、爭、戰(S.1964)《同音》(42A4)注右  ɣwə

《文海》(W.938) ɣwə-ɣwej 二字連用，《掌中珠》(295) 鬥爭。

R.28 sə 2.25 清、淨、潔(S.4149) cf. 藏文 seng-po clean
R.34 sej 1.33 清、淨(S.1855) bseng-po

R.28 pə 1.27 大(S.3941)
R.34 pej 1.33 *大(S.3476)

《文海》(W.870) pə（大）字從 pej（大）。

在上面三組同源詞中，第一組有《文海》及《掌中珠》的字例，顯示B(R.28)與C(R.34)連用，且B在前C在後，第二、三組未找到文獻上使用的例子。

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[2] 星號表示西夏字的漢譯係由《文海》注釋間接推知，並無對譯資料的文獻作根據。

[3] S代表 Sofronov(1968)字表號碼。

[4] W代表《文海》號碼。

3.2 短元音二等韻之間的轉換

依排列的次序推測，與R.9及R.35對應的B類韻應是R.29〔1.28-2.26〕iə。果然在R.29中找到兩組與R.9轉換的例子，以及三組與R.35轉換的例子。

a) R.29 與 R.9

R.29 [illegible] kiə 1.28 叫呼(S.0135)《同音》(24B1)注左 [illegible] kie
R.9 [illegible] kie 1.9 叫呼(S.0560)《同音》(24B1)注右 [illegible] kiə

《文海》(W.286, W.943) kiə-kie 二字連用，其義爲「叫呼」。
又參看 Nevsky (1960: I -548)及 Kepping (1979:429, No.734)。

R.29 [illegible] khiwə 1.28 *剛硬(S.2182)《同音》(25B4)注左 [illegible] khiwe
R.9 [illegible] khiwe 1.9 *剛硬(S.2397)《同音》(28A2)注右 [illegible] khiwə

《文海》(W.299, W.961) khiwə-khiwe 二字連用，作「*剛硬」解，又作族姓名稱。

上面二組同源詞連用，都是B(R.29)在前，A(R.9)在後。R.29-R.9連用的同源複合詞構詞法一旦獲得確証，下面一組同源複合詞的第一字也可以據此推斷是屬於R.29。

R.29? [illegible][5] dźiwə? 1.28? 拳(髮)(S.5336)《同音》(41A3)注左 [illegible] dźiwe
R.9 [illegible] dźiwe 1.9 拳(髮)(S.3853)《同音》(39B1)注右 [illegible] dźiwə

《文海》(W.2764) dźiwə-dźiwe 二字連用，據《類林》(291-5)二字對譯「拳(髮)」。

b) R.29 與 R.35

R.29 [illegible] dziə 2.26 迴(S.5338) 《同音》(34A3)注左 [illegible] dziej
R.35 [illegible][6] dziej 2.31 旋、輪(S.0468)《同音》(40B7)注右 [illegible] dziə

《文海》(W.3002) dziə-dziej 二字連用，《掌中珠》(371) 對譯「輪迴」，《類林》(518-4) 對譯「迴旋」，又西田《西夏文華嚴經》(072-051)對譯「流轉、旋環」。

R.29 [illegible] kiə 2.26 ? (S.2096)《同音》(24B1)注左 [illegible] kiej
R.35 [illegible] kiej 2.31 ? (S.1780)《同音》(21B5)注右 [illegible] kiə

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[5] 「[illegible]」字見於《同音》正齒音類，《文海》應在雜類，正好雜類正齒音部份殘缺，因無反切資料而不知所屬何韻。本文依西夏語音韻轉換及構詞法而推測其所屬韻。

[6] 「[illegible]」字 Sofronov 以爲在1.30，但據《文海》其反切下字作 [illegible] shiej，此字在1.34，而反切下注明「上聲」，故應在與1.34相配的2.31。

由《同音》注字知 kiə-kiej 二字連用，Nevsky 西夏詞字典(Ⅰ-307) [illegible] 字下注明 [illegible]（頸骨節），不知所據爲何，《俄譯文海》(W.3785, W.3940) 據此譯作 śejnye pozvonki（頸椎）。

《同音研究》譯爲「輪迴」，大概是據字形所作的推測。

據我的推測此二字原義爲「迴旋」，故字從「迴旋」，引申爲「頸項」取義於其左右轉動的功能。二字字義雖僅止於推測，但二字構成音韻轉換則毫無疑義。

R.29 [illegible] śiə 1.28 *引、導(S.5424)《同音》(35B6)注左 [illegible] śio
R.35 [illegible] śiej 1.34 *引、導(S.1836)《同音》(38B6)注左 [illegible] śio

二字下《同音》都注 [illegible]「導、引」，而知其爲同義字。

上面共有三組同源詞，前兩組由《文海》及《同音》注字知二字連用，且B(R.29)在前C(R.35)在後。

3.3 短元音三等韻之間的轉換

這一類的轉換例子最多，也是以前就發現的（參見龔 1993:959-965），本文的研究乃是在這基礎上進一步的發展。爲了方便本文的閱讀仍舉其例以見其全貌。

a) R.30, R.31 與 R.10, R.11

R.31 [illegible] bjɨ 1.30 *低、下(S.0501)《同音》(5A5)注左 [illegible] bji
R.11 [illegible] bji 2.10 下(S.3591) 《同音》(2A6)注右 [illegible] bjɨ

《文海》(W.1028) 以第一、二字爲同義詞，且二字連用 bjɨ-bji，意爲「下」。

R.31 [illegible] mjɨ 2.28 默(S.2544)
R.11 [illegible] mji 2.10 默(S.3760)

文獻中二字連用 mjɨ-mji 對譯「默」、「默然」。

R.31 [illegible] kwjɨ 1.30 鳥名(S.5707)《同音》(25B2)注左 [illegible] kwji
R.11 [illegible] kwji 1.11 鳥名(S.5746)《同音》(24B6)注右 [illegible] kwjɨ

《文海》(W.416, W.1095) kwjɨ-kwji 二字連用，爲鳥名。

R.31 [illegible] lhjɨ 1.30 安詳、徐徐(S.3347)《同音》(48A5)注左 [illegible] lhji
R.11 [illegible] lhji 2.10 安詳、徐徐(S.5001)《同音》(47A2)注右 [illegible] lhjɨ

《文海》(W.1083, W.3026) lhjɨ-lhji 連用，意爲「安詳、徐徐、漸漸」。對譯資料中，[illegible] lhji 字又作 [illegible] lhji，同音假借。

R.31 lhjɨ 1.30 蟲名(S.3375)《同音》(48A4)注左 lhji
R.11 lhji 2.10 蟲名(S.0406)《同音》(47A2)注下 phji-lhjɨ

《文海》(W.1082, W.3030) phjɨ-lhjɨ-lhji「蟲名」。

R.30 śjɨ 1.29 往、至、詣(S.1052)《同音》(38B1)注左 śji
R.10 śji 2.9 往、到、詣(S.1020)《同音》(35A6)注右 śjɨ

《文海》(W.985) 以二字爲同義詞，《同音》注字顯示 śjɨ-śji 的次序。第二字並可接詞頭　。

R.30 ljɨ 2.27 ? (S.2208)《同音》(48B5)注左 lji
R.10 lji 2.9 ? (S.3356)《同音》(49A7)注右 ljɨ

俄譯《文海》譯作「同意、同志」，《文海研究》譯作「溺愛」，不知何者爲是? 《同音》注字顯示 ljɨ-lji 的次序。

R.31 kjɨ 1.30 *高歌(S.5038)《同音》(25A5)注左 kji
R.10 kji 1.10 *高歌(S.4134)《同音》(25B3)注右 kjɨ

《文海》(W.313, W.1055) kjɨ-kji 連用，意爲「高歌」。

b) R.30, R.31 與 R.36, R.37

R.31 bjɨ 1.30 高、上(S.0494)《同音》(5A4)注左 bjij
R.37 bjij 2.33 高(S.1309)　《同音》(2B4)注左 so

《文海》(W.1027) bjɨ-bjij 連用，「上」義。《同音》注字顯示的意義是：　字經常與　連用，而　字則有獨立的意義「高」(　)。

R.31 tjɨ 1.30 一、若(S.2704)《同音》(18A7)注左 tjij
R.37 tjij 1.36 或、若(S.2071)《同音》(15B3)注右 tjɨ

《文海》(W.1032) tjɨ-tjij 二字連用，文獻資料對譯「若、假使」。

R.31 djɨ 1.30 *病(S.4116)《同音》(13B1)注左 djij
R.37 djij 1.36 *病(S.4546)《同音》(14A2)注右 djɨ

《文海》(W.1047) djɨ-djij 二字連用，其義爲「疾病」。

R.31 njɨ 1.30 姑、*親(S.2959)
R.31 njɨ 1.30 *親(S.5081)
R.37 njij 1.36 親、近(S.1235)

《文海》(W.1041) 以第一、三字爲同義詞。

R.31 khjɨ 1.30 *後代(S.1878)《同音》(24B4)注左 khjij
R.37 khjij 1.36 *後代(S.2083)《同音》(22A1)注右 khjɨ

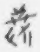
《文海》(W.1058) khji-khjij 二字連用，意爲「後代、子孫」。

R.31 tsjwi 1.30 *搓、揉(S.1608)《同音》(34A5)注左 tsjwij
R.37 tsjwij 1.36 *搓、揉(S.4928)《同音》(34B4)注右 tsjwi

《文海》(W.1104, W.1116) tsjwi-tsjwij 二字連用，《文海研究》譯爲「揉困」。

R.31 sji 2.28 識、知(S.2058)《同音》(30A6)注左 sjij
R.37 sjij 2.33 識、情(S.1272)《同音》(31B5)注右 sji

文獻資料 sji-sjij 二字連用 (Nevsky 1960: I-305, 306) 對譯「相識、顧識」，《類林》(332-6)對譯「親知」。

R.30  dźji 1.29 *眞(S.2540) 《同音》(39B3)注左 dźjij
R.36 dźjij 1.35 純、*眞(S.4909)

《文海》(W.2705, W.2720) dźji-dźjij 二字連用，意爲「眞、實」。

R.30 lji 1.29 午(S.5675)《同音》(48B5)注左 ljij
R.37 ljij 2.33 午(S.4815)《同音》(52A5)注右 lji

文獻資料 lji-ljij 二字連用，對譯「卓午」(《掌中珠》094)，「日中」(《類林》241-3, 429-6)。

3.4 長元音一等韻之間的轉換

依排列的次序推測，與R.12及R.38對應的B類韻應是R.32〔1.31〕əə，然而此韻字數不多(《文海》中只有十九字)，只發現可能有同源關係的字只有一組如下：

R.32 dəə 1.31 *愚昧(S.0847)
R.12 dee 2.11 垢穢(S.4553)

二字是否可連用，並無資料可考。

3.5 長元音二等韻之間的轉換

B類韻母長元音二等無字，自也無轉換的例子。

3.6 長元音三等韻之間的轉換

與R.14及R.40對應的B類韻母是R.33〔1.32-2.29〕jii。R.33與R.14之間共發現九組同源詞，其中有文獻資料可以確定連用的共有五組，都是B(R.33)在前，A(R.14)在後，其例如下：

a) R.33 與 R.14

R.33 [illegible] phjɨɨ 1.32 *使遣(S.5249)《同音》(9A6)注左 [illegible] phjii
R.14 [illegible] phjii 2.12 *使遣(S.1038)《同音》(8A2)注右 [illegible] phjɨɨ

《文海》(W.1161) phjɨɨ-phjii 二字連用，意爲「使遣」。[7]

R.33 [illegible] bjɨɨ 1.32 *羅、署(S.4779)
R.14 [illegible] bjii 2.12 羅、署(S.5399)

《文海》(W.1163) 以二字爲同義。

R.33 [illegible] djɨɨ 2.29 濯、汜(S.4168)《同音》(16A7)注左 [illegible] djii
R.14 [illegible] djii 2.12 *濯、汜(S.4169)《同音》(15B2)注右 [illegible] djɨɨ

《同音》注顯示二字連用爲 djɨɨ-djii。

R.33 [illegible] dzjɨɨ 2.29 習、令(S.4867)《同音》(33B4)注左 [illegible] dzjiij
R.14 [illegible] dzjii 2.12 *學、教(S.0561)《同音》(32B7)注左 [illegible] dzjiij

《文海》(W.2930) dzjɨɨ-dzjii 連用，指「學習」。

R.33 [illegible] tśjɨɨ 2.29 蹶(S.2983)《同音》(39A7)注左 [illegible] tśjii
R.14 [illegible] tśjii 2.12 跌(S.2980)《同音》(Sofronov 1968:II-210)
注右 [illegible] tśjɨɨ[8]

對譯資料顯示 tśjɨɨ-tśjii 連用，意爲「蹶失」。

R.33 [illegible] śjɨɨ 1.32 疑(S.0228)《同音》(41A3)注左 [illegible] śjii
R.14 [illegible] śjii 1.14 疑(S.4072)《同音》(39B2)注右 [illegible] njiij 心

《文海》(W.453)及對譯資料 njiij-śjɨɨ-śjii 三字連用，對譯「（心）疑、（心）恍惚」(《類林》399-1)。

R.33 [illegible] ljɨɨ 2.29 *待(S.4712)
R.14 [illegible] ljii 2.12 待(S.2265)

第二字可接詞頭 [illegible]，並單獨出現。

R.33 [illegible] lhjɨɨ 2.29 *悔(S.0319) 《同音》(51B2)注左 [illegible] lhjii
R.14 [illegible] lhjii 1.14 悔、退(S.5375)《同音》(54B3)注右 [illegible] lhjɨɨ

《文海》(W.2827) lhjɨɨ-lhjii 二字連用，意爲「改悔」。

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[7] 《文海研究》及《同音研究》均譯爲「阿諛」，但《文海》字形解說認爲 [illegible] 字从 [illegible]「話」从 [illegible]「傳」，我認爲是取義於「遣人傳話」。從「同源詞」的觀點看，此二字與1.14的 [illegible] phjii、2.12的 [illegible] phjii以及1.11的 [illegible] phji都是同一來源。

[8] 舊版《同音》因有殘缺而不見此字。此處引用的是新版《同音》。

b) R.33 與 R.40

R.33 [illegible] djii 2.29 *笑(S.0496)《同音》(16A7)注左 [illegible] djiij
R.40 [illegible] djiij 1.39 笑(S.1173)《同音》(19A2)注右 [illegible] djii

《文海》(W.1352) djii-djiij 二字連用，意爲「嘻笑」。第二字可獨用，並接詞頭 [illegible]（《類林》197-5, 210-5, 300-6 等等）。

R.33 [illegible] dzjii 2.29 習、令(S.4867)《同音》(33B4)注左 [illegible] dzjiij
R.40 [illegible] dzjiij 2.35 教、學(S.4859)

《文海》(W.2916, W.2934) dzjii-dzjiij 二字連用，意爲「學習」。

R.33 [illegible] sjwii 1.32 思、憂(S.3461) 《同音》(33B6)注左 [illegible] sjiij
R.40 [illegible] sjiij 2.35 思、想、惟(S.5662)《同音》(29A1)注右 [illegible] sjwii

《文海》(W.1185) sjwii-sjiij 二字連用，其義爲「思念」。
又 Nevsky (1960:II-29)對譯「慮」。

R.33 [illegible] ljii 2.29 稍待(S.4712)
R.40 [illegible] ljiij 2.35 待(S.2266)
R.40 [illegible] ljiij 1.39 *稍待(S.3497)

《文海》(W.1368) ljii-ljiij 二字連用，其義爲「稍待」。又第二字可接詞頭 [illegible]，第二、三字均可單獨出現。

四、三系列音韻轉換的起源

從上一節的討論中我們看到Ｂ類韻母與Ａ、Ｃ類韻母之間有成系列的轉換現象，而且其結合方式爲ＢＡ及ＢＣ，在這一節中我們擬探討這種轉換現象及構詞法的起源問題。

4.1 首先必須解答的問題是有同源關係的Ａ、Ｂ、Ｃ三系列語詞中何者爲基式，何者爲衍生式的問題。從大多數的情形來看，在可造ＢＡ式及ＢＣ式的複合詞中，語詞Ｂ通常不單獨出現，它出現時經常與Ａ或Ｃ結合，相反的Ａ與Ｃ則既可與Ｂ結合，也可與其他的詞結合，甚至也可以單獨出現。例如：ＢＡ式的 [illegible][illegible] bji-bji「下」與ＢＣ式的 [illegible][illegible] bji-bjij「上」在夏譯《類林》中有如下用法：

《類林》(346-6)

[illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible] [illegible]
病 者 心 上 上 方 及 心 下 下 方 等 pre. 置
＝病在膏肓之上下

a）在ＢＡ式的 [illegible] bji-bji「下」中，第一個音節（Ｂ類）的 [illegible] bji，在 Nevsky 的字典(1960: I -573)裏沒有詞例，第二音節的 [illegible] bji（Ａ類）則有下列三個詞例(Nevsky 1960: II -72)：

[illegible]	高下
[illegible]	下劣，卑賤
[illegible]	下民

此外在西田《西夏文華嚴經》(204-068)也有下列兩個詞例：

[illegible]	下地
[illegible]	垂下

在西夏字書《文海》中Ｂ類的 [illegible] bji 共出現五次，每次都是與Ａ類的 [illegible] bji 字連用（如：[illegible] bji-bji「下」），沒有與其他的字連用的例子。Ａ類的 [illegible] bji 則共出現八次，其中四次爲上面所說的 [illegible] bji-bji 連用的例子外，其他則有：

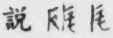
10.171	[illegible]	闊步下
34.271	[illegible]	高低
37.252	[illegible]	下（單獨用）
37.251, 38.221	[illegible]	不低（單獨用）
38.241	[illegible]	子孫下輩人

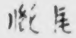
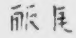
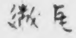
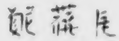
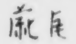
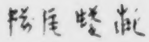
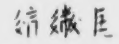
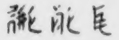
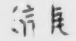
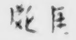
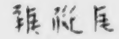
無論是 Nevsky 或西田所錄的文獻詞例，或是西夏字書《文海》的詞例都一致地顯示，Ｂ類的 [illegible] bji 不單獨出現。它只能與Ａ類的 [illegible] bji 連用，不能與其他詞連用。相反的，Ａ類的 [illegible] bji 則不但可單獨出現，也可與 [illegible] bji（Ｂ類）以外的詞結合出現。

b）以下我們再看看ＢＣ式 [illegible] bji-bjij 的情形。

Ｂ類的 [illegible] bji 字在 Nevsky 的字典沒有看到詞例(1960: I -569)。Ｃ類的 [illegible] bjij 字則有下面三個詞例（上引書 II-354）：

[illegible]	高下
[illegible]	尊嚴
[illegible]	人有高下

再看看《文海》的情形，Ｂ類的 [illegible] bji 在《文海》共出現八次，都是與Ｃ類的 [illegible] bjij 結合（如 [illegible] bji-bjij「上」），無一例外。Ｃ類的 [illegible] bjij 字在《文海》中共出現二十六次，其中八次即是上面所說  bji-bjij 連用的情形，此外的十八次其情形如下：

10.132, 37.252, 78.121		不高（單獨用）
23.121		高言
23.141		下上
27.111		（地名）
32.272, 36.233, 57.241		上輩
52.141		高高在天
60.121		地高低
67.211		地面上
82.172, 84.141, 雜 3.221		高地
雜 7.132		敬上
雜 10.141		（地名）

從上面的討論，我們看到在ＢＡ式及ＢＣ式構詞法中，Ａ與Ｃ都可以獨立出現，是一種「自由語式」(free form)，而Ｂ只能依附在Ａ或Ｃ前才可能出現，是一種「附著語式」(bound form)。

4.2 西夏語的音韻轉換，另外還有一種是鬆緊元音之間的轉換。在西夏語一Ｏ五韻中，第一韻至第六十韻是屬於 Sofronov 所謂的大循環韻，第六十一韻至第七十六韻屬於第一小循環韻(Sofronov 1668:137)。大循環韻與第一小循環韻的分別，西田龍雄(1964:68)認爲是鬆元音與緊元音的分別。

關於鬆緊元音之間的對應關係，經過研究已可確認下面的關係（參看龔 1993:952）：[9]

	鬆元音		緊元音	
A類	A	R.10〔1.10-2.9〕ji R.11〔1.11-2.10〕ji	A_1	R.70〔1.67-2.60〕jị
B類	B	R.30〔1.29-2.27〕ji R.31〔1.30-2.28〕ji	B_1	R.72〔1.69-2.61〕jị
C類	C	R.36〔1.35-2.32〕jij R.37〔1.36-2.33〕jij	C_1	R.64〔1.61-2.54〕jij

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[9] 在 Gong (1988:820) 中誤把R.31與R.64相配，因而導致推論上的錯誤。根據後來的研究(Gong 1989以及龔 1993)已確認R.64應與R.36及R.37相配。

從上面的架構來觀察上一節所討論的ＢＡ式及ＢＣ式中ＡＢＣ三類語詞的鬆緊元音間轉換的問題，我們發現在ＢＡ式及ＢＣ式構詞中，只有Ａ類與Ｃ類可以與A_1及C_1轉換，而Ｂ類則沒有轉換的例子。

由鬆緊元音之間的轉換及ＡＣ類語詞可以獨用而Ｂ類語詞只能依附在ＡＣ語詞之前，可以看出Ａ及Ｃ乃是基式，而Ｂ則是衍生式。這些關係可以圖示如下：

鬆元音　　　　　　緊元音

Ａ類　A　 bji^2 低，下(2.11)⟶ A_1 bji^1 使低，使下(1.67)

↓

Ｂ類　B　 bji^1 低，下(1.30)

Ｂ類　B　 bji^1 上(1.30)

↑

Ｃ類　C　 bjij^2 高，上(2.33)⟶ C_1 bjij^1 舉＜使高(1.61)

4.3 接著我們必須探討的問題是基式（Ａ類及Ｃ類）與衍生式（Ｂ類）在語音上各有什麼特點，它們的主要區別在那裏。在上面我們爲了討論的方便從一開始就把擬測的音值代入。根據這些擬測，Ａ類與Ｃ類韻母共同的特點是它們都是前元音，而Ｂ類韻母則屬於央元音。這樣的擬測主要是根據對音資料而來，西田(1964)與 Sofronov(1968)一致認爲R.8至R.14（西田稱爲第三攝）具有前元音，而R.28至R.33（西田稱爲第五攝）則具有央元音。至於Ｃ類韻母（R.34至R.40）雖然西田與 Sofronov 意見稍有不同，也大致認爲它們具有前元音。茲將他們兩人與本文的擬音對照列表於下：

	西田(1964)	Sofronov(1968)	本文
Ａ類韻	第三攝		
8 (1.8-2.7)	-ɪ	e	e
9 (1.9-2.8)	-ɪě	ê	ie
10 (1.10-2.9)	-i	i̭e	ji
11 (1.11-2.10)	-iɦ	i	ji
12 (1.12-2.11)	-ʷɪɦ	e	ee
13 (1.13)	-ʷɪɦ	ê	iee
14 (1.14-2.12)	-ɪɦ	i̭e	jii

B類韻	第五攝		
28 (1.27-2.25)	-ʉɦ	ə	ə
29 (1.28-2.26)	-ʉ	ə̂	iə
30 (1.29-2.27)	-ɨɦ	i̭ə	jɨ
31 (1.30-2.28)	-ɨ	ɪ	jɨ
32 (1.31)	-ʉ̃	ə	əə
33 (1.32-2.29)	-ɨ̃	i̭ə	jɨɨ
C類韻	第六攝		
34 (1.33-2.30)	-ɛ	ei	ej
35 (1.34-2.31)	-ǐɛ	êi	iej
36 (1.35-2.32)	-ɛɦ	i̭ei	jij
	第七攝		
37 (1.36-2.33)	-eɦ	ɪn	jij
38 (1.37-2.34)	-e	ai	eej
39 (1.38)	-ey(?)	ai	ieej
40 (1.39-2.35)	-ǐeɦ	i̭e	jiij

從表上可以看出本文所謂的A類韻母相當於西田的第三攝及 Sofronov 的 e 類元音。本文的B類元音相當於西田的第五攝及 Sofronov 的 ə 類元音。本文的C類元音相當於西田的第六攝及部份第七攝（西田的第七攝還包括R.41至R.43）。

本文的擬測在確認主要元音的性質上沿襲了西田與 Sofronov 的說法，但是在各攝內各韻的擬測則根據我以前的研究(Gong 1994)，把韻母分成三等（Sofronov 則分成四等），元音分長短（Sofronov 不分長短）。至於各韻間關係的定位也參照了韻母轉換的現象。在這裏必須強調的是認爲B類韻母具有央元音，而AC類韻母則具有前元音乃是根據對音資料的証據而來，現在從這一語音特徵出發，來觀察轉換現象，可以說A→B的變化表示前元音＞央元音的變化，至於C類韻母與A類韻母的區別如果認爲是在韻尾 -j 的有無（參看Gong 1989:28-32），則C→B的變化除了表示元音的央化外，還加上韻尾的脫落。

A→B　e > ə　ee > əə
ie > iə　iee > iəə（沒有字例）
ji > jɨ　jii > jɨɨ

C→B	ej > ə	eej > əə
	iej > iə	ieej > iəə（沒有字例）
	jij > jɨ	jiij > jɨ

4.4 接下來我們必須考察，在BA式及BC式複合詞中B類韻母產生的背景，由於B類語詞經常依附在A、C類語詞之前才能出現，而其中A、C是基式，則我們不難推知原來的語式是重疊式的，由於重音落在第二音節，第一音節因弱化而變成央元音，由此產生了B類韻母，[10]其關係可簡示如下：

$$AA \longrightarrow BA$$

$$CC \longrightarrow BC$$

按西夏語中有相當豐富的「重疊式」構詞，馬忠建(1987)把它們分成七類，包括形容詞、動詞、代詞、數詞、量詞、名詞、副詞等等，可以說包羅萬象，應有盡有。

但既然認爲是「重疊式」，而且係藉由同一西夏字的重複來表示，照說便不能認爲發生了第一音節的韻母弱化的現象，這樣便使本文所提出的「三系列音韻轉換起源於重疊構詞法」的主張根本發生動搖。但在這裏必須說明的是：第一音節的韻母發生弱化並不是對所有的元音都發生，就目前所看到的情形來說，似乎只發生在前元音重疊的時候，在 a、o、u 等元音的音節中並沒看到韻母的變化。例如：

sar-sar	[illegible]	（令軍人佯裝雜亂不整）
	軍 人 佯 散 散 行 令	（夏譯《孫子》25A-4）
bow-bow	[illegible]	（其疾如風）
	風 如 急 急	（夏譯《孫子》6B-2）
bio-bio	[illegible]	（無邀正正之旗）
	旗 正 正 上 勿 進	（夏譯《孫子》11-7）
thju-thju	[illegible]	（勿擊堂堂之陳）
	陳 堂 堂 上 勿 擊	（夏譯《孫子》12A-1）
rjur-rjur	[illegible]	（處處有通道）
	諸 諸 道 有	（夏譯《孫子》8B-7b）

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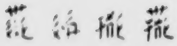
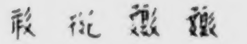
[10] 但B類韻母可能原先已獨立存在，故嚴格的說，應該是B類韻母從A、C類韻母分裂出來，再跟原來的B類合併。

ɣu-ɣu  (林木隱蔽)
木 立 隱 隱 (夏譯《孫子》22A-1a)

最後一個例子，西夏文雖用了不同的文字，然而卻是同音字，故也屬於重疊的例子。

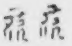
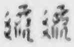
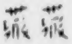
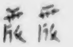
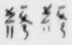
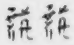
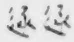
在這裏必須指出的是：西夏語使用表意文字，是否有因文字上的限制以致音韻變化未能充分反映的情形，例如應該分別造字，但因造字不夠而權且使用同一個字表達或雖已分別造了字，但作者卻未加利用的情形。以下是西夏文字本可以分別寫出ＢＡ式重疊，但不知何故卻寫成ＡＡ式重疊的例子，例如：

ＢＡ式 lhji-lhji 徐行驅之
徐 徐 pref. 驅 (夏譯《孫子》14A-1a)

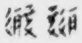
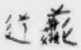
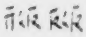
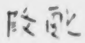
ＡＡ式 lhji-lhji  其徐如林
林 如 徐 徐 (夏譯《孫子》6B-3)

上面二句中ＢＡ式及ＡＡ式表達的語意看不出有何基本的差異，我們可以認爲二者原本是一體的，後來發生ＡＡ＞ＢＡ的變化，遂產生兩種不同的形態，但是我們也不能排除西夏人原來即已分別ＡＡ式與弱化的ＢＡ式，以表示不同的語意的可能性。

以馬忠建(1987)所舉的例子來看，動詞的重疊都有一些共同的語意特徵，例如：

1. dju-dju  有有 → 所有、一切
2. dźjij-dźjij  有有 → 所有、一切
3. śja-śja  現現 → 所現、所現之物
4. ljij-ljij  見見 → 所見、所見之物
5. wji-wji  作作 → 所作
6. rjir-rjir  得得 → 所得、所得之物
7. dźjiij-dźjiij  居居 → 所居

但是ＢＡ、ＣＡ式構詞法所表達的語意卻無此特徵，例如：

8. lə-le  鬥鬥 → 打鬥
9. ɣwə-ɣwej  戰戰 → 鬥爭
10. kiə-kie  叫叫 → 呼叫
11. dźiə-dźiej  迴迴 → 迴旋

12. kji-kji [illegible] 唱唱 → 歌唱

13. tsjwi-tsjwij [illegible] 揉揉 → 搓揉

14. sji-sjij [illegible] 識識 → 相識

上面兩種類型之間的差異可能與所表達的語意有關，因爲依照本文所提出的轉換規律，上面例 2、4、5、6、7 都需要與相對應的央元音作音韻轉換，但是在這裏並沒發生音韻轉換的現象，因此我們或許可以提出我們的初步的看法，西夏語重疊構詞法通常用於表示“強調”（如表示一切）“每一”（如日日、世世）等語意，如果重疊而語意表示“互相”（如上面例8至例13多少含有“互相”的語意）或與不重疊無很大差異時，重音落在第二音節，因而引起第一音節的弱化，第一音節如果是前元音，它將轉換爲相對應的央元音。

爲了說明單音節詞與雙音節詞在語意上沒發生太大的變化，可以舉下面二例加以說明，夏譯《類林》有下面兩句：

[illegible]...[illegible] 病在膏肓之...下
病 者 心 下 下 方 等 pre. 置

[illegible] 楚王在上而伏向下
楚 王 上 爲 者 面 下 方 pre. 視 （《類林》346-6，占夢篇）

上面兩句中表示「下方」部分，一作ＢＡ式重疊的下下方（[illegible]），一作不重疊的下方（[illegible]），而其意義無殊。

另外《掌中珠》(295)的

[illegible] 與人鬥爭
人 與 戰 戰

似乎也與《類林》中的下面兩句，在意義上無大差別。

[illegible] 晉侯（欲）與楚戰
晉 侯 楚 國 與 戰 欲

[illegible] 明日與楚戰
後 日 楚 與 pre. 戰

ＢＡ式重疊的 [illegible] 與不重疊的 [illegible] 似乎在意義上也沒很大的差異。

五、結　語

西夏語A、B、C三系列間有成系統的音韻轉換現象，我們在三類韻母之間發現不少的同源詞，這些同源詞往往可以結合而造同源複合詞，在這時通常是B在前，而A、C在後，形成BA及BC的結構，在這樣的結構中，通常是B類韻母不單獨出現而A、C則可以單獨出現。A、C另外也可以與緊元音的A_1C_1轉換造使動式，但B則不再與其他字轉換，由此推知A、B、C三者中，A、C是基式，而B則是衍生式。B式的產生乃是起源於西夏語重疊構詞法，由於重疊與不重疊在語意上並無很大的功用，通常重音落在第二音節，第一音節因弱化而產生音韻變化。

西夏語雖然有少部分的詞不構成BA、BC式，而仍然有AB或BC兩種形式，且也可以單獨使用，如本文開頭所舉的兩個「死」字與兩個「樹、薪」字，這樣的詞因爲也符合整個轉換系統，應該是轉換現象發生以後的個別發展，這類詞彙分化的條件，如果個別去觀察無法了解其產生的背景，只有從整個系統的觀點才可以了解此類個別字產生發展的過程。根據本文的討論，只有A類韻母的 sji, 2.10與 sji, 1.11可以拿來作漢藏語的比較，同樣的道理在BC式中也只有C類語詞可以作漢藏語比較之用。經過這一番清理，西夏語與藏緬語的對應關係便顯得清晰可見了。

西夏語A類韻母的漢藏語對應關係：

夏：		*sji		*sji
漢：	死	*sjid	薪	*sjin
藏：	འཆི	*'sji > 'chi	ཤིང	*sjiŋ > shing
緬：	သေ	*sij > se	သစ်	*sik > sac

西夏語C類韻母的漢藏語對應關係：

夏：		njij		sjij
漢：	邇	njir[11]		
藏：	ཉེ	nye	ཤེས	shes
緬：	နီး	ni	သိ	si'

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[11] 漢語上古音脂部字在中古入脂韻的字本文依董同龢(1967)及李方桂先生(1971)用 -d 韻尾表示，另外上古脂部字在中古入支韻的字（如「邇」）也依董同龢（上引書）用 -r 韻尾表示，以爲區別。

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漢語方言音節“鬆緊”的南北差異

（初　稿）

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［提　要］

在現代吳語音系，普遍存在“緊喉”（配陰調）和“帶濁流”（配陽調）兩類的對立。本文同意沈鍾偉教授的説法，認爲這現象“表現在整個音節上”是“音節上的事實”，把它叫做音節的“緊”和“鬆”。

筆者依據平山久雄教授、橋本萬太郎教授在六十年代提出的看法，推斷由這“鬆緊”對立發生了(1)古全濁聲母的送氣清音化、(2)古次清聲母的濁化等音變。這些現象主要分布在吳語的西、北部邊緣地區，有可能反映這一帶曾經是吳語地盤的事實，以及古吳語跟周圍方言的交融。

在一些浙南吳語、閩語（古全濁聲母今讀不送氣清音層）、湘語、平話等，配陽調的古全濁聲母没有“帶濁流”的特徵。筆者以爲，這些方言的古全濁聲母原來具有“緊”類的特徵，跟吳語等不同。因此，我們把這兩種分別叫做“閩湘平類型”和“吳贛客類型”。

最後討論“鬆緊”跟漢語東南方言的(1)先喉塞音聲母、(2)送氣聲母“通音化”、(3)“送氣分調”、(4)“變音（小稱變調）”等現象的關係。因爲官話系統方言很少發生這一類音變，本文推測“鬆緊”的對立是在漢語東南方言比較突出的發聲類型。關于粤語（廣州等）古全濁聲母逢平上送氣、逢去入不送氣的原因，本文未能解決。

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1．吳語的“緊喉”和“帶濁流”

趙元任(1928:27-28)描寫現代吳語聲母的性質，提出了下面非常著名的定義：

> 幫端見破裂音讀法是法文派的硬音，比北京的讀法較緊而脆。
>
> 吳語的濁類聲紐的發音最特別。在大多數地方這些字都用一個帶音的氣流就是〔彎頭 h〕音。假如是個破裂音，那音的本身並不帶音，換言之當它閉而未破的時候，聲帶並不顫動，等開的時候接著就是一個帶音的 h，就是〔彎頭h〕，因此聽起來覺得像很“濁”似的。

這一段論述是以後的吳語語音研究的出發點。李榮(1966:45)分析吳語温嶺話的聲母系統，又指出了它的特點：

> 温嶺方言的鼻音聲母和邊音聲母，就發音方法説各有兩套：一套有緊喉作用，一套帶濁流。在聲母和聲調的配合關係上，緊喉的鼻音、邊音聲母跟喉塞音[?]相同，也跟其他不帶音聲母相同；帶濁流的鼻音、邊音聲母跟濁喉塞音[h]相同，也跟其他帶音聲母相同。

從此以後，介紹各地吳語音系特點的著作，多數接受趙、李兩家的意見進行描寫。關于趙氏所謂“帶濁流”的實質，已經有人作過實驗工作，從不同的角度認出了它的特點，例如石鋒(1984)、曹劍芬(1982)、李榮(1986)、曹劍芬(1987)等。多數學者強調，“緊喉”和“帶濁流”不能簡單地視爲聲母的不同，而是整個音節的特點。

根據這事實重新歸納吳語聲母音位的，要舉出沈鍾偉(1988)。沈教授根據古全濁字的“濁流在（吳語青浦）商榻話中並不是聲母的性質，而是音節的特徵，在濁的音節中自始至終存在”的事實指出：

> 濁流的出現是在整個音節上的，它應當是屬于音節層級的事實，不屬于聲母或韻母。所以，音節濁流和音節曲折變化及音長一樣都是音節的區別性特徵，不同的音節的類別是由這些要素一起構成的。……商榻話的聲調不單單是音高曲折變化的一個要素，而是包含有音高曲折變化，音長以及濁流有無等諸個音節特徵的一個綜合表現。(165)

商榻話聲母[p t k s]配陰調，[b d g z]配陽調，兩者的分配互補，可以把傳統分析法的“清濁”兩套聲母分析成一組音位/p t k s/的變體。這樣，沈文所定的商榻話輔音音位僅有下面十九種：/p p' m f t t' n l ts ts' s tɕ tɕ' ȵ ɕ k k' ŋ h/

總之，在吳語音系，整個音節不帶“氣音”（所謂“緊喉”）跟帶“氣音”（所謂“帶濁流”）的對立形成一個重要發聲類型（發聲方式），下面把它叫做音節的“緊”和“鬆”[1]。而在漢語北方方言，音節“鬆緊”的特徵不象吳語那麽顯

而易見，或許我們可以把“鬆緊”所起作用的大小看做漢語南北方言的一個區分條件。

2．音節“鬆緊”和語音演變

在中國東南方言中，吳語保留的音節“鬆緊”特點比較突出。但在其他一些方言，“鬆緊”消失以後有時轉化爲其他語音現象，留下了痕跡。關于具體舉例，我們擬在下文3．分項進行討論。

現在需要考察的是，音節“鬆緊”怎樣地影響到不同方面的語音演變這一個基本問題。也許有不少前人的著作已經看到這一點或者做過深入的分析，只是筆者注意到的文獻有限，下面着重引述平山久雄教授和橋本萬太郎教授在六十年代初期發表的看法。

2．1．“鬆緊”和中古聲母的“清濁”

平山(1960)應用“鬆緊”對中古以來的漢語聲母、聲調的發展進行過全面的分析[2]，發表的年代也比較早。在此首先介紹該文的幾個論點：

(1) 中古全濁聲母可能具有某種帶音（voiced）的特徵，但這並不等同于“全清、次清／全濁”兩類的區別性特徵就是“帶音／不帶音”。如果我們把這兩類的特徵擬定爲“tense/lax”[3]，就比較容易解釋漢語方言“全濁音清化”和聲調調類分化的過程。現代吳語“濁聲母”的[h]音成分是其根據之一，平山(1960:10)認爲這[h]音是由聲帶鬆化的影響出現的。

(2) 中古“全清／次清”兩類的區別性特徵可能是“緊喉（glottalized）／非緊喉（non-glottalized）”[4]，其論據有兩點：①影母（全清）的中古擬音以及在現代一些方言的讀法都是[ʔ]；②根據袁家驊等(1960:61)及趙元任(1928)的記載，吳語浦東話、川沙話、南匯話的古全清聲母今讀都帶點縮氣音的色彩[5]。這可能是緊喉引起喉頭下降而產生的。中古塞、塞擦聲母系統可以如〔表一〕解釋。

(3) 人們傾向于使用更容易、更省力的發音方式。這情形在自然語言中非常普遍，是語音變化的重要原因之一。發出全濁聲母的時候，聲帶需要保持比較鬆的狀態。而爲了省力讓聲帶更加鬆化，它的顫動就會變弱，很容易發生塞音持阻初期階段（或全部持阻階段）的清化、整個音節的氣聲化（breathy）等情形[6]。氣聲化引起聲調調值的下降，說話的人可以憑調值的高低（〔表二〕①的[33]和[113]）來代替輔音的帶音不帶音這一特徵，聽辨聲母的“清濁”。

不過，氣聲化的發音需要吐出多量的氣息，這一點跟人們對省力的要求完全

相反。因此有一部分人開始全據調值的高低辨別聲母的“清濁”。調值的“陰陽”轉爲區別性特徵以後，原來的全濁聲母失去獨立音位的地位，或歸入全清，或歸入次清（表二②）。

(4) 古全濁聲母清化可以分成幾個類型[7]。分化的條件由“濁音清化”開始時的全清、次清、全濁聲母的具體音值決定：

①在全清音讀得比較強（fortes）的方言（如現代吳語），可能不容易發生全濁聲母的全清化。

②在次清音的送氣成分比較強而長的方言，可能不容易發生古全濁聲母的次清化。

③如果次清音有帶音送氣成分，或者由于它的影響韻母也帶氣音，全濁聲母跟次清聲母容易合併。在全濁音的[h]比較強而長的方言，同樣容易發生全濁聲母的次清化。

(5) “清濁”兩類的區別性特徵從聲母轉移到聲調調值（參(3)），因此全清聲母的區別性特徵“緊（tenseness）”失去原來的重要性，有些方言的全清聲母開始變成弱輔音（lenis）。

表一　平山(1960)假設的中古聲母的特徵

	glottalized	non-glottalized
tense	全　清	次　清
lax	全　濁	

表二　平山(1960)假設的中古全濁聲母清化過程

(一)	全清	/pa33/	次清	/p'a33/	全濁	/ba33/
		[pa33]		[p'a33]		[pʱa113]
(二)	全清	/pa33/	次清	/p'a33/	全濁	/pa113/或/p'a113/
		[pa33]		[p'a33]		[pa113]或[p'a113]

［注］在此假定四聲裏某調類的古調值是中平調/33/，不分陰陽。

表三　古全濁聲母在漢語方言中的發展（Hashimoto(1960))

		帶喉塞 glottalized	送氣 aspirated	帶音 voiced
蘇州	全清	+	—	—
	次清	—	+	—
	全濁	—	+	+
永康 松江 浦東	全清	(+)	—	+
	次清	—	+	—
	全濁	—	+	+
蒲圻 通城	全清	+	—	—
	次清	—	+	+
	全濁	—	+	+
客家 臨川	全清	+	—	—
	次清	—	+	—
	全濁	—	+	—
通山 福州 厦門	全清	+	—	—
	次清	—	+	—
	全濁	+	—	—
文昌	全清	+	—	(+)
	次清	—	+	—
	全濁	+	—	(+)

按：福州、厦門似乎不包括古全濁聲母今讀送氣清音層。

(6) 我們不能單純地把全清、次清、全濁三套聲母的重組解釋成“全濁聲母清音化”。這現象實際上等于全部聲母系統的重新組合，有些區別性特徵失去原有的意義，或者原來的一些音位變體被賦予區別性意義。就是説，不僅全濁聲母發生音變，全清、次清聲母方面也經過了一些變化[8]。

2．2．“鬆緊”在東南方言

在漢語許多方言，古全清塞音聲母的今讀多少帶點緊喉成分。Hashimoto(1960:131-132)以爲，這種緊喉成分和海南島文昌話吸氣音的發音機制有些相似，前者在口腔裏面形成的阻塞先除阻，同時放開聲門使氣流衝出；後者先除阻，然後放開聲門。這樣，兩者的差別只在口腔除阻和張開聲門兩個動作先後次序的不同。

橋本教授根據“帶喉塞、送氣、帶音”三點，對漢語方言古全濁塞音、塞擦音聲母的發展方向進行了分析。表三是筆者依據Hashimoto(1960:133-134)的記載整理成表的。

平山、橋本兩家都認爲，區別“全清、次清、全濁”三套聲母的特徵不僅有帶音／不帶音、送氣／不送氣兩項，還有緊喉成分的有無。就是説，音節“鬆緊”牽涉到的問題比較多，至少要波及整個東南方言的聲母發展。

這“緊喉成分”跟三套聲母的搭配在漢語東南方言並不一律，如Hashimoto(1960)指出，至少可以分成兩派：全濁聲母帶“濁流”的“吳贛客類型”，不帶“濁流”的“閩湘平類型”。

3．吳贛客類型的“鬆緊”對立

3．1．分布和特點

吳贛客類型的“鬆緊”分布範圍是江淮官話泰如片、大部分吳語、贛語、客家話。這一類型裏面最典型的是吳語，古全清聲母往往帶先喉塞化現象，古全濁聲母今讀“帶濁流”的“鬆”音。江淮官話泰如片、贛語、客家話是過渡性質的，“鬆緊”對立在這些方言引起(1)古全濁聲母次清化、(2)古次清聲母濁化等音變。

3．1．古全濁聲母次清化

在江淮官話泰如片、大部分的贛語及客家話，古全濁塞音聲母多數變爲送氣清音[9]，參表四。這一現象就是“贛客”同源論或者“江淮贛客”同源論的有力根據之一，也是所謂“普林斯頓假設（Princeton Hypothesis）”[10]的出發點。

不過，在贛語昌靖片的德安話，“古全濁聲母字今有讀[b d g]一類濁音，有

讀送氣的清音濁流的，有讀不帶濁流的送氣清音的，同一個字有時這樣讀，有時那樣讀”（顏森(1986:21)）。假如吳語那種“鬆”濁音只留下送氣成分，非常可能跟古次清聲母合併。從古全濁聲母送氣清音化的地理分布考慮，我們倒不如提出下面假設。這跟Sagart(1984)的看法[11]比較接近：

> 古全濁聲母的送氣清音化現象主要集中在吳語的邊緣地區（北邊是江淮官話泰如片，西南邊是贛語及客家話）。中國東南地區的濁音送氣清音化有可能是吳語跟周圍方言互相交融的結果。

表四　古次清、古全濁的合併現象（以並母爲例）

	全清	次清	濁（平）	濁（仄）
江淮官話泰如片	p	pʻ	pʻ	pʻ
吳語	p	pʻ	bɦ	bɦ
贛語（東北）	p	b	b	b
贛語（多數）	p	pʻ	pʻ	pʻ
客家話	p	pʻ	pʻ	pʻ

只是古全濁聲母的次清化並不是現代江淮、贛、客方言所特有的現象。至遲在中唐時期，北方一些方言已經發生了如下音變：

(1) 韓愈〈諱辯〉（寫于元和五年［公元810年］）說：“漢諱武帝名徹爲通，不聞又諱車轍之轍爲某字也”（《昌黎先生集》卷十二，四部叢刊初編縮本106頁）。“徹（徹母）”、“轍（澄母）”二字均屬山攝開口三等薛韻，只有聲母的不同。可見在韓愈的音系，澄母逢入聲時的讀音跟徹母無別。

(2) 反映十世紀河西方言的藏漢對音資料《大乘中宗見解》、于闐文《金剛經》中的古全濁塞音、塞擦音大部分變成送氣清音。參高田(1988:73)。

(3) 根據西夏語對音，十二世紀末漢語西北方言的古全濁塞音、塞擦音一律變成送氣清音。詳見龔煌城(1981)、王洪君(1987)。

(4) 中原官話汾河片古全濁聲母多讀送氣清音，參侯精一(1986)。屬于該片的聞喜話等，文讀層不送氣，白讀層送氣，參王洪君(1987)。

那麼，我們能不能依據古全濁聲母送氣清音化這一事實肯定江淮贛客方言和中

原官話汾河片在譜系上的關係，或者徑認爲現代江淮贛客方言是古中原方言直接的一支後裔？　筆者以爲，古全濁聲母在吳語有“帶濁流”跟在江淮贛客方言發生“次清化”一正一變，本質上完全連續。既然如此，我們必須假設：吳語和江淮贛客方言的古全濁聲母今讀都反映中唐以後的中原音系的特點。這個假設好像很不容易證明。而且主張“中原贛客”同源關係的學者也還沒有能够提出十分有說服力的論證。可以認爲，這是系屬不同的方言發生平行音變（古全濁聲母次清化）的結果。

３．２．古次清聲母濁化

３．２．１．前人對“古次清聲母濁化”的解釋

在江西北部、湖北東部、湖南東北角一帶的贛語區，我們可以看到跟“古全濁聲母次清化”相反的音變方向，就是“古次清聲母濁化”。這現象可能是趙元任等(1948)所發現，有代表性的地點是江西省德安、星子、都昌、湖口、武寧；湖北省蒲圻、通城；湖南省的岳陽、臨湘[12]等。關于這一特殊音變，平山(1960)、Hashimoto(1960)、Sagart(1984)、Sagart(1988)、何大安(1988)等論著都做過有關論述。

（1）　“鬆緊”和“次清濁化”

平山(1960)没有明文討論“次清音濁化”的機制。以下所記的是筆者參考該文內容(23-24)妄加推測的音變過程，並不代表平山教授本人的觀點。

> “次清音濁化”主要發生在次清音的阻塞比較弱（lenis）的方言（據趙元任(1935)，南昌話的[b̥ʰ]是弱送氣音），其機制有兩個可能性：
>
> ①由于韻母的影響，次清音的送氣階段發生濁化[h > ɦ]。
>
> ②由于聲母送氣成分的影響，韻母的元音帶氣音。

Hashimoto(1960)對蒲圻、通城的“次清音濁化”的解釋把“全清／次清、全濁”視爲“glottalized/non-glottalized”的對立，跟平山教授的設想有比較一致的部分。

（２）“矯枉過正（hypercorrection）”

Sagart(1984:89-91)提出的是音變上的“矯枉過正（hypercorrection）”說。Sagart教授以爲，漢晉時期南渡的北方移民原來定居在鄱陽湖周圍地區說“前贛北語Proto-northern Gan”，這批人的語言一直到後來還保留着聲母全清、次清、全濁的三向對立。到唐朝時期，有大量“新移民”南下進入鄱陽湖地區，他們用[pʻ]摹仿、代替了本地居民的[pɦ]，這就是贛南語、客家話的前身，“前贛南語Proto-southern Gan”。因爲漢晉以來的舊族在贛北的社會、經濟均占上風，他們的方言也發揮比較大的影響力，“新移民”試圖把這高級階級性方言的特點－濁音聲母－吸收過來。而在“新移民”的音系，古次清、古全濁兩套聲母已經完全合併，結果

表五　“全濁次清化”在贛、客方言

①　Sagart(1984) 的假設

	全清　　次清　　全濁	
漢晉移民	p 陰調　p' 陰調　pɦ 陽調	
唐代新移民	p 陰調　p' 陰調　p/pɦ 陽調 ↓　　↓　　↓ p 陰調　p' 陰調　p' 陽調 ↓　　↓　　↓ p 陰調　b 陰調　b 陽調	在北方已發生 b > p/pɦ 用[p']代替本地的[pɦ] hypercorrection

②　Sagart(1988)的修改意見

	全清　　次清　　全濁	
漢晉移民	p 陰調　p' 陰調　b 陽調 ↓　　↓　　↓ p 陰調　b 陰調　b 陽調	前贛北語（PNG) hypercorrection
唐代新移民（留在贛北）	p 陰調　p' 陰調　pɦ 陽調 ↓　　↓　　↓ p 陰調　p' 陰調　p' 陽調 ↓　　↓　　↓ p 陰調　b 陰調　b 陽調	在北方已發生 b > pɦ hypercorrection
唐代新移民（遷至贛南）	p 陰調　p' 陰調　pɦ 陽調 ↓　　↓　　↓ p 陰調　p' 陰調　p' 陽調	唐代北方話 前贛南語（PSG)

“矯枉過正”連古次清聲母也讀成了濁音。後來Sagart(1988:152)又修改了這篇論文的一些觀點，參〔表五〕②。

（３）規律逆轉

何大安(1988:37-52)從“規律逆轉”的觀點解釋湖南臨湘話的“次清化濁”和湖南平江話的“濁化次清”兩個相反現象，假設如下的演變過程：

$$[+\text{濁}] \cdots\cdots\rightarrow \begin{bmatrix} +\text{送氣} \\ \\ -\text{濁} \end{bmatrix} > \begin{bmatrix} \pm\text{送氣} \\ \\ +\text{濁} \end{bmatrix}$$

關于發生這種逆轉音變的原因，何教授認爲：“本來只應發生在陽調，但由于過度應用的關係，或者由于（這）是個很強的影響規律，於是連陰調中的送氣清聲母（次清）也被一起捲入了。”何大安(1989：774-775)又補充：“次清化濁”比“送氣分調”發生時代更晚。

３．２．２．評論

以上三種解釋可謂見仁見智。不過，目前筆者傾向於支持（１）的音節“鬆緊”說。在吳語類型的音系，古次清、古全濁兩套聲母都帶有送氣成分，屬于“鬆”類，只有不帶音跟帶音的差別。既然性質相近，在語音演變過程這兩套聲母比較容易合併。那時候會有兩條路：一條是古全濁聲母次清化、另一條是古次清聲母濁化。雖然前一種演變分布得比較廣泛，我們不能排除發生第二種演變的可能性。

上文三種說法裏面，（２）的“矯枉過正”說關心爲什麽在贛鄂湘交界這塊地方發生了“古次清聲母濁化”，非常引人入勝。只是想找出客觀的根據來嚴密地論證“矯枉”的過程，恐怕不很容易。

４．閩湘平類型的“鬆緊”

４．１．特點和分布

江淮官話泰如片、贛、客各方言的“古全濁聲母次清化”以及“古次清聲母濁化”是“鬆緊”的遺留，我們可以說這些音變主要出現在吳語北、西邊。那麽在吳語的南邊—閩語區—爲什麽不出現這類現象？ 因此，我們提出另一種“鬆緊”對立，閩湘平類型。這類型的分布範圍是閩語、一部分徽語、一部分吳語、湘語、平話。越南漢字音的有些層次曾借自閩湘平類型。

在閩湘平類型，古全清、古次清分別屬于“緊”、“鬆”類，跟吳贛客類型沒有分別。但古全濁聲母在少數地點今讀不“帶濁流”的濁音，在絶大多數的地點都

讀成比較弱的不送氣清音。反正閩湘平的古全濁聲母不帶“濁流”，有時比較接近“緊”類聲母。最極端的例子是閩語瓊文區，即海南方言，古全清聲母和古全濁聲母都“緊”到讀爲縮氣音的程度，甚至只留下喉塞音聲母[ʔ][13]。

在吳語的邊緣地帶，有時能看到吳贛客、閩湘平兩個類型犬牙交錯的分布。

(1) 吳語宣州片　在郎溪定埠話，古並母逢平讀[b～pɦ～p']，逢仄讀[p]（官話類型）。而在當塗縣東部等地點，並定母還讀爲[bɦ dɦ]，後帶濁流（吳贛客類型），在石埭掘珠話、貴池灌口話，“濁塞音全部變不送氣清音”，參鄭張尚芳(1986:16-17)。珠話、貴池灌口話，“濁塞音全部變不送氣清音”，參鄭張尚芳(1986:16-17)。

(2) 浙閩贛交界　在福建浦城“臨江話、水北話主要是陽平字讀濁音，但很不穩定，常常游移于清濁之間……例如臨江‘爬 pa^{11} ～ ba^{11}、除 ty^{11} ～ dy^{11}、曹 tsao^{11} ～ dzao^{11}、潮 tɕiao^{11} ～ dʑiao^{11}、窮 kioŋ ^{11} ～ gioŋ ^{11}’”（鄭張尚芳(1985:4)），另參〔表六〕。

表六　古全濁聲母在浙閩贛交界地區

（材料全部根據鄭張尚芳(1985)）

	陽平	陽上	陽去	陽入
泰順羅陽	p	b	p	b
景寧標溪	p	b	b	b
龍泉	b	p	b	b
上饒	p	b	b	b
江山長臺	p'	b	b	b
慶元	p	p	p	p

(3) 丹陽　在丹陽城内白讀，古全濁聲母一律讀成比較弱的不送氣清音[b̥]，但在城外永豐鄉讀成[bɦ]，參趙元任(1928)。

4．2．閩語古全濁聲母今讀送氣清音的來源

閩語的古全濁塞聲母今讀分化成不送氣和送氣清音，找不出音變規律。根據Norman(1991:346)的統計，在現代閩語，屬于陽調的全部塞音、塞擦音字裏頭讀不送氣清音的占67%，讀送氣清音的占22%，這些文字的送氣或不送氣，各方言之間對應比較整齊。其餘的11%是讀法不穩定的，甲地送氣，乙地不送氣。Norman教授爲了解釋這種特殊分化，提出了古閩語清濁聲母各分不送氣、送氣、弱化三套的學說。　關于“弱化濁聲母”，平田(1988a)已經從語言層次的觀點給予了解釋，認爲它是通過吳閩語的接觸形成的一層，起源不會很早。其餘的不送氣、送氣兩套濁聲母的構擬問題也在平田(1982)進行辨析，向Yue-Hashimoto(1976)的語言層次說表示了贊同意見。

在閩語海南島文昌話等方言，古全清、古全濁兩套聲母都讀縮氣音。根據這事實，可以擬定閩語古全濁聲母是“緊”類的音，跟吳語上海話等不同（參〔表三〕）。閩語古全濁聲母今讀的分化現象是語言接觸的結果，今讀不送氣清音應該是比較早期的層次。不過，要是把閩語的古全濁聲母定爲“緊”類，不得不解釋上面約占20-30％比例的送氣清音的來源。下面補充説一下送氣清音層能够大量進入閩語的原因。

４．２．１．聲母系統的空檔

吳語及廣西龍勝伶話等的聲母在連讀變調中經常發生清濁替換，有時産生兩套濁聲母，參平田(1988b:313)。

例如張洪明(1988)指出，“在連讀音變中，新派上海方言新産生了不獨用的七個清化聲母”。這“清化”聲母跟原來的“不送氣清音、送氣清音、濁音”三系列的性質都不相同，因此新派上海話有下面四套塞音聲母：

		帶音	緊	氣流	調類	調類替換後的音值
上海	?p ?t ?k	—	+	—	陰	——
	p' t' k'	—	?	+	陰	——
	b d g	+	?	—	陰	（只在連調後字出現）
	bɦ dɦ gɦ	+	—	+	陽	b d g

不過，並不是全部吳語都發生同樣的變化。根據目前掌握的材料，大致上可以説：①發生清濁替換的音節，在北部吳語（蘇州、崇明、嘉定、上海新派）限于連調後字，而在南部吳語（武義、湯溪）擴大到連調前、後字；②發生替換的聲母的範圍，嘉定等限于古次濁，上海新派、諸暨擴大到古全濁，武義不管清濁一切聲母都可以替換。下面是傅國通(1984)描寫的武義話聲母替換規律，比上海話更爲整齊。請注意，武義話的濁聲母是没有“濁流”的“緊”類，性質跟閩語古全濁聲母今讀不送氣清音層相似。

		帶音	緊	氣流	調類	調類替換後的音值
武義	?p ?t ?k	—	+	—	高	b d g 低
	p' t' k'	—	－?	+	高	pɦ tɦ kɦ 低
	b d g	+	+?	—	低	?p ?t ?k 高
	pɦ tɦ kɦ	+	—	+	低	（只在連調前後字出現N）

吳語的塞音、塞擦音聲母在單字音系裏面本來只有三套：不送氣清音、送氣清音、濁音。第三套“濁音”的性質在吳語內部有差異，在北部基本上有“鬆”類的“濁流”，而在南部没有這種特徵。不管濁音“鬆”還是“緊”，音系裏面有跟它相配對的空檔，變調以後經過“清濁”（即“鬆緊”）替換出現的“第四套”聲母可以占這個位置。替換以後能够進入“第四套”的聲母的種類以及它在連調中的位置等制約，在浙江南部比較少（閩語的具體情況如何，現在没有找到合適的材料，因此暫時舉出浙南吳語爲例）。要是在這種狀態接觸到吳贛客類型的方言，古全濁聲母變送氣清音的讀音也許比較容易占用“第四套”的位置。

4．2．2．送氣不送氣的交替

Norman(1991:342-343)舉出一些通過聲母的送氣不送氣交替形式區別詞義的例子，認爲古閩語濁聲母可以通過送氣不送氣的替換改變詞性、詞義。下面兩對該文所列的福州話：

平	paŋ-2	(<*b)	'level, flat'
	phaŋ-2	(<*bh)	'to roll (cloth) smooth'
直	tik-8	(<*d)	'straight'
	thik-8	(<*dh)	'to comb out straight'

類似的現象在侗台、藏緬語族也能看到（馬學良等(1991:913-914)、戴慶厦(1990)），筆者不否定依據送氣不送氣派生新詞的可能性。

5．音節“鬆緊”的旁證

根據上面討論，我們可以提出，在中國東南地區，音節的“鬆緊”對語音演變起了不小作用。在這一帶還能找到一些“鬆緊”對立的跡象：

第一是先喉塞聲母（包括縮氣音）。這現象主要出現在東南沿海地區（在閩語區出現得比較少），從趙元任(1935)以來引起學者的注意，陳其光等(1991:213-214)認爲“勉語和漢語中的喉塞濁聲母是侗台語等影響的結果”。前人對此現象的介紹和研究史，參看平田(1983-84)[14]。

第二是“送氣分調”問題。何大安(1989)論定，“送氣分調”現象主要集中在吳語、贛語。假如塞音聲母的“緊（古全清）”和“鬆（古次清、古全濁）”的對立比較明顯，後者容易帶一點“氣聲”成分。平山(1960:22-24)又以爲，這“氣聲”必然會使聲帶顫動頻率變小，次陰調的調值也隨着變低。

第三是古次清聲母的“通音化”。張光宇(1989:44-45)指出，“從閩南到海南的聲母變化可以歸結爲‘兩極化’的演變。就是，以氣流在發音部位上所受的阻礙程度而言，一種變化是受阻程度加大（即喉塞化），一種變化是受阻程度減弱（即通音化）”。

喉塞化　閩南話[p t]　>　海口話[?b ?d]
通音化　閩南話[ph]　>　海口話[ph]（吐氣量較大）
　　　　[th tsh]　>　[h s]

張教授強調的“兩極”，我們可以解釋成閩湘平類型的“緊”和“鬆”[15]。

第四是變音。平田(1988b)提出過一些方言的變音來自音節“緊喉化”的猜想。假如這猜想能够站得住脚，就可以把變音看做“鬆緊”替換的一例。

跟“鬆緊”有關的以上四種現象主要分布在漢語東南方言，在其他方言非常少見。

6．結束語

根據已經出版的方言調查報告，這種“鬆緊”對立以及它所引起的音變主要出現在中國東南地區，不見于官話、晉語等的北方方言。從這事實也許可以看到，音節“鬆緊”是漢語東南方言的一個重要特徵[16]。在北方方言的音變，“鬆緊”的作用似乎並不顯眼。至于粵語的情形（古全濁聲母逢古平上聲讀送氣清音，逢古去入聲讀不送氣清音）應該怎麽解釋，筆者未能寫出答案。

	全清	次清	全濁	次濁
北方類型	（看不出“鬆緊”的積極作用）			
吳贛客類型	緊	鬆	鬆	緊／鬆
閩湘平類型	緊	鬆	緊？	？
粵語（廣州）	（本文未能解決）			

附注

* 筆者在岩田礼先生主持的漢語方言研究會（1989年8月日本靜岡大學）第一次討論本文的初步想法，承蒙與會師友的指正。因爲筆者對客家話古全濁聲母送氣清音化的來源的解釋不同于所謂“普林斯頓假設”，當時把拙見戲稱爲“靜岡假設（Shizuoka Hypothesis）”。後來有一次向何大安先生呈信求教，又

承平山久雄先生賜贈平山(1960)影印件，得到不少教益，謹此表示謝忱。但本文中存在的任何錯誤都由筆者一人負責。

1　這裏所謂“鬆緊”既不僅是聲母的特徵，也不限于元音的特徵。戴慶厦(1990:4-5)指出，藏緬語族“鬆緊元音”的“鬆緊的差別往往也造成在聲母、聲調、舌位等方面的一些差別”，好像也不限于元音的現象。

2　平山(1960)的全文（油印本共38頁）還沒有正式發表。只有平山(1968:145)極簡單地談到了作者對中古聲母“清濁”的看法。

3　平山(1960:9)說，“tense/lax”採用了 R. Jacobson and M. Halle(1956). *Fundamentals of Language* 的定義。

4　平山(1960:11)說，這術語相當于 R. Jacobson 的“checked/unchecked”。

5　袁氏只提到['b 'd 'g]的存在，沒有説明這些聲母跟中古音的對應關係，袁家驊等(1983:60)也相同。平山(1960:11)根據趙元任(1928)推斷了這些音都來自中古全清聲母。

6　平山(1960:13)認爲唐代長安方言或現代吳語的全濁聲母所帶的[h]是這樣形成的。

7　楊秀芳(1989)一共分爲七個類型。

8　平山(1960)下面還討論次濁聲母跟“濁音清化”的關係等多方面的問題，玆略。

9　黃雪貞(1987:85)説：“古全濁聲母字客家話今音也有不送氣的，這個不能簡單説成少數或例外。”這情形在McIver的客家話詞典已有反映。

10　關于“普林斯頓假設”的內容説法不一，本文根據Ballard(1971:148)。

11　Sagart(1984:91)認爲，江淮官話泰如片處于官話和吳語的過渡帶；泰如片發生古全濁聲母次清化的過程跟贛、客方言相同，是南渡的北方移民（其音系已失去帶音聲母）不準確地摹仿南方的氣聲化（breathy）帶音聲母而産生的。

12　參顔森(1986)、趙元任(1948)、鮑厚星等(1986)。

13　此外，古次清聲母有“通音化”的傾向。這些都是Norman教授所謂“第三套清塞音、清塞擦音”的來源。

14　參平田(1983-84)。近幾年來發表的漢語方言先喉塞聲母及相關現象的描寫有游汝傑(1984)、曹志耘(1987)、陳忠敏(1988)，通論性文章有鄭張尚芳(1988)、陳忠敏(1989)等。

15　可是，“通音化”並不限于江南。劉熙《釋名》〈釋天〉：“天，豫、司、兗、冀以舌腹言之。天，顯也。在上高顯也”（《國學基本叢書》影印王先謙《釋名疏證補》本19頁）、《集韻》平聲先韻馨煙切：“祆，關中謂天爲祆”（中華書局影印北京圖書館藏宋本）。這兩則材料都證實在北方曾經有過透母字“

通音化”現象。“通音化”還有邱尚仁(1991)和李如龍等(1992)記錄的江西南城話白讀、李如龍等(1992)記錄的福建建寧話等。

16 說起“鬆緊”，大家會聯想到藏緬語族的“鬆緊元音”，參戴慶厦(1990)。另外，吳語的“緊喉”、“帶濁流”兩套古次濁聲母基本互補，不一定能看做音位性的對立。到永定下洋話的清濁鼻音完全可以算不同音位（黃雪貞(1984)），而這種清濁鼻音是亞洲東南部一些語言的特徵（Dantsuji(1984)）。

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漢語饒舌歌的口語節奏：從語言類型談起

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1. 引言

漢語饒舌歌是一種相當特殊的語言藝術，一九八七年首次出現於臺灣坊間，由於發展的時間尚短，韻律形式猶未成熟，因此牽引出許多很有趣的語言現象。本文旨在於探討漢語饒舌歌的口語節奏，分析的語料包括一九八七年至一九九四年出版的國臺語饒舌歌。我們將從六個切面來研究此種語言藝術的節奏特色，玆列如下：

1. 音節計數與重音計時的拔河
2. 聲調與重音的對抗
3. 起伏聲調與固定聲調的妥協
4. 虛詞的逆向附著
5. 直接成分的分解切割
6. 强調式的重音衝突

前三個切面將仔細剖析語言類型(language typology)的全面競爭，後三個切面則延伸觀察各個語言部門(linguistic components)之間的互動關係。

2. 音節計數與重音計時的拔河

漢語在傳統上是以「音節計數」(syllable-counting)來表現它的節奏，每一個音節所佔的時間大致相等， 也就是說，語句所需的時間長短取決於音節

數的多寡。小孩子朗朗上口的童謠是最自然的例子：[註一]

(1) 小姐小姐別生氣
明天帶妳去看戲
我坐椅子妳坐地
我吃香蕉妳吃皮

(2) 小姐小姐妳眞美
小鳥頭，鸚哥嘴
水桶腰，蘿蔔腿
西瓜肚皮香蕉背

例(1)的四個韻行皆爲七個音節所構成，每行所需的時間一樣多，正常速度約爲2.8秒。例(2)的二、三行只有六個音節，前後各1.2秒(三個音節)，中間停頓0.4秒。由於音節計數的特性，停頓的時間常常會塡上一個讚歎詞或擬聲詞之類的虛字音節，如「啊」、「呀」、「喲」等等，因此例(2)常以例(3)的形式出現：

(3) 小姐小姐妳眞美
小鳥頭呀鸚哥嘴
水桶腰呀蘿蔔腿
西瓜肚皮香蕉背

例(3)插入「呀」之後，相關的韻行遂湊足了七個音節，而與其它兩行所需的時間一般。

英語的節奏與漢語不同，它是一個「重音計時」(stress-timing)的語言，一段話耗費的時間端視重音的數目而定。[註二] 重音計時的節奏特色是强弱間起伏鮮明，其中以黑民族饒舌歌的重勢節奏(Heavy Stress Rhythm)尤爲凸

顯。以下是一個比較整齊的例子：(´ = 重音)

(4) (Nasty：末段)

´ ´ ´ ´
Who's that thief in nasty thoughts?
´ ´ ´ ´
Who's that in that nasty calls?
´ ´ ´ ´
Who's that eat that nasty foods?
´ ´ ´ ´
Who's that came to my nastic room?

例(4)的第四個韻行與前三行的音節數不同，但是每行皆有四個重音，因此所耗費的時間沒什麼差別，約3.2秒。一般說來，重讀音節(stressed syllable)所佔的時間通常較長，非重讀音節(unstressed syllable)所佔時間較短，各個重音之間所含音節數可能不同，但是時間間隔(Timing Interval)則往往是相等的，此即所謂的「等時轉換」(isochronous movement)。[註三] 當漢語套上饒舌歌的韻律形式時，語言類型的衝突可以說是一觸即發：

(5) (跳：第1-3行；臺語)

´ ´ ´ ´
跳 跳 跳乎伊 爽
´ ´ ´ ´
跳 跳 跳乎伊 勇
´ ´ ´ ´
跳 跳 跳甲欲起 佼

例(5)的漢語饒舌歌詞是使用英語「等時轉換」的特質來處理的，每行有四個重音，而重音與重音之間的時間間隔相等。不過，漢語對重音計時的節奏其實並非照單全收，例(5)的饒舌應屬一個特例，因爲它的作者與主唱者是以英語爲母語，對國語或臺語的認識十分模糊，因此在吟唱的時候較容易擺脫音節計數的束縛。[註四] 如果饒舌歌由漢語語者所作、所唱，其表現的節奏形式則

可能出現音節計數與重音計時的全面競爭現象。可能前幾行是音節計數，後幾行即變成了重音計時：

(6) (報告班長：第4-5行；國語)

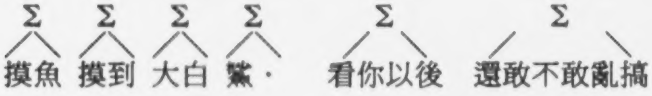
昨天晚上沒睡好　現在頭疼不得了
管你睡好沒睡好　出操上課照樣跑

(7) (報告班長：第12行；國語)

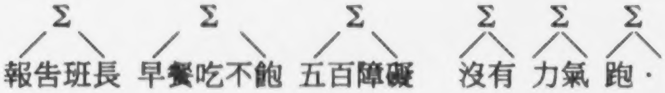
給你福利當福氣 給你方便當隨便 給你輕鬆當放鬆 給你臉你不要臉

例(6)的韻行基本上皆是由兩個七音節的半行所合成，每一個音節約占0.4秒，爲典型的音節計數節奏。例(7)由四個韻律結構所組成，結構裏也包含七個音節，其中頭一個音節皆爲重音，而重音之間的時間間隔亦相等，約1秒鐘，可以說是音節計數與重音計時的融合。有趣的是重音間隔中的音節長度被迫縮短，使得重讀音節時間相對延長且強度加大。類似的實驗證據在許多學者的的研究中也曾發現，如亞倫(1975,1979)，羅希斯特(1977,1979)。我們再看看下面的節奏變化：(Σ ＝ 音步)

(8) (報告班長：第7行；國語)



(9) (報告班長：第10行；國語)



例(8)分爲六個音步，前四個音步皆由兩個音節(或一個音節加一個停頓)組成，每一個音步所佔時間大致相等，表現音節計數的節奏，而頗令人訝異的是接下來的兩個音步突然轉成了重音計時的形式，重音落於「看」與「還」，雖然這

兩個音步內所含的音節數不同，但所占的時間則無明顯差異，各約0.8秒。例(9)恰好相反，前三個音步屬重音計時，而後三個音步屬音節計數，其中「早餐吃不飽」與「沒有力氣跑」形成鮮明的對比，前者構成單一的音步，後者分而爲三。簡單地說，一個韻行裏竟允許兩種音韻類型互相較勁，而這類較勁現象亦不斷出現在行與行、段與段之間，時而重音計時占優勢，時而音節計數扳回一城，形成了十分獨特的「拔河式」韻律。

3. 聲調與重音的對抗

漢語是一個「聲調語言」(tone language)，而英語屬於「重音語言」(stress language)，當聲調模式與重音模式接觸時，任何一方的音韻功能都有不堪埋沒的趨勢，因而發生互相干擾的情形：

(10) (報告班長：第15-17行；國語)

ˊ
帶單兵攻擊教材小板ML凳

ˊ
戴鋼HH盔步槍不用上刺刀

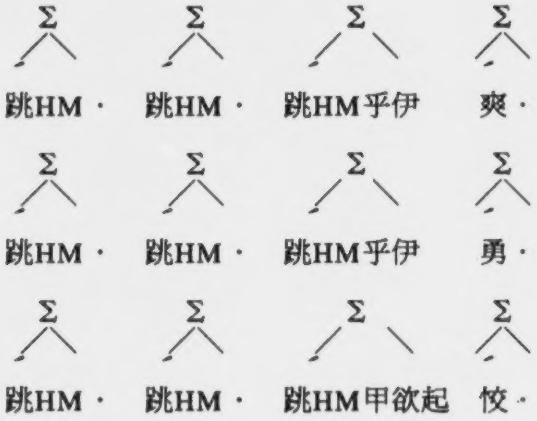
ˊ
紮S腰帶打綁LH腿不戴防毒面具

由例(10)顯示，韻行的第一個音節爲重音所在，聲音的強度最大，亦即「帶」、「戴」與「紮」。不過每行除了重讀音節之外，還有一個音節刻意拉長爲兩拍，形同次重音，如底線標示。拉長的音節凸顯了它的聲調，其中「板」爲三聲、「鋼」爲一聲、「綁」爲二聲(連調)。[註六] 也就是說，每一行不僅有一個音節特別重讀，而且另有一個音節的調型格外明顯，形成了重音與聲調分庭抗禮的韻律。

基本上，重音在漢語語音層次的功能(phonetic function)不外乎四個方面：亦即加強音節的響度(loudness)、增加音節的長度(length)、加寬聲調的弧域(contour range)、以及提高聲調的音階(pitch height)。[註五] 例(10)的「板」與「綁」爲起伏調，音節拉長連帶地使其調弧明顯加寬；「鋼」的高平調拉

長之後，聽起來要比「盛」略高半音。聲調的音階提高並不只限於平板調，重勢節奏的重音(heavy stress)也可能將起伏調的調弧提高八度：

(11) (跳：第1-3行；臺語)


Σ Σ Σ Σ
跳HM· 跳HM· 跳HM乎伊 爽·
Σ Σ Σ Σ
跳HM· 跳HM· 跳HM乎伊 勇·
Σ Σ Σ Σ
跳HM· 跳HM· 跳HM甲欲起 恔·

例(11)使用的語言爲臺語，「跳」的本調調型爲低降ML，而高降HM是它的連調。[註七] 從這個例子來看，每行有三個「跳」，其中只有第三個合乎變調原則，前兩個各自構成一個單音節音步，沒有連調變化的環境。可是在三個「跳」都接受重音的前提下，它們皆呈高降調。就前兩個「跳」而言，有兩種可能的解釋：一者，可能重勢重音使臺語的「跳」在不合語境的情況下變調；二者，可能爲了配合重勢重音而發生「語碼轉換」(code-switching)，選擇國語的「跳」，其本調調型即爲高降。兩者任何一個解釋都告訴我們，饒舌歌的重音節奏已經攪亂了漢語聲調的正常運作。

此外，饒舌歌的重音指派通常不會像例(11)這麼整齊，往往是一會兒「左揚」(left- prominent)，一會兒「右揚」(right-prominent)，這種多變的重音節奏也往往牽制了漢語的特殊變調：(N = 輕聲)

(12) (報告班長：第2-3行；國語)

稍息N以後 開始行動

稍息HH———

「稍息」的「息」通常必須輕聲化，但是當它重讀的時候輕聲則不能運作，如例(12)後行的「息」所呈現的既非輕聲，亦非本調，而是拉長的高平(HH)。殷允美(1989)曾就此類高平調的浮現提出了一個十分貼切的說法：認爲它是一種後補性的「抵輔調」(default tone)。輕聲與抵輔調成互補分佈(complementary distribution)，前者只能落在輕讀位置，後者則位於重讀音節。重音的轉變使得輕聲與抵輔調並排於前後行，形成鮮明的對比。羅奇(1982)的研究觀察發現，高聲調的音節有時會被誤認爲是帶有重音的音節；例(11-12)則出現了重音選擇高聲調的現象。聲調語言套上了重音語言的韻律模式，不可避免的是聲調與重音糾纏不休，饒舌歌的節奏也因此橫生趣味。

4. 起伏聲調與固定聲調的妥協

聲調語言大致可分爲「起伏聲調語言」(contour toone language)與「固定聲調語言」(register tone language)兩類。漢語屬於起伏聲調語言，可是在饒舌歌裏有時也會出現固定聲調語言的特質：

(13) (MONKEY在我背：第3段；國語)

M ————————————
我拼命的跳舞我還我還大風吹

M ————————————
我風車頭轉前撲後閣兼劈腿

M ——————————
我大白天甩到三更半夜

可是MONKEY在我的背，爲什麼它在我的背

(14) (MONKEY在我背：第6段；國語)

M ————————————
各位消防大爺恁著稍控制一咧

M ———————————————
我是溫柔細緻天生麗質的花花大少爺

M ————————————————
你們要小心謹慎如履薄冰如臨深淵

事成之後每人贈送一隻黃金大烏龜

例(13-14)基本上是以國語發音，只有「恁著稍控制一咧」爲臺語。這裏有一個很奇怪的韻律現象，也就是前三行固定在一個中平(M)的音階，失去了原來的調弧起伏，直到第四行才恢復聲調的區別功能(distinctive function)。換句話說，這兩段的節奏主要是以調階而非調弧來表現。不過，此種表現方式並不是每一次都必須中和(neutralize)聲調的區別性：

(15) (我是神經病：第4段；臺語)

H —L- M——— H —L- M———
我 是神經病啊 我 是神 經 病

↑ H —L- M——— H —L- M———
我 是神經病啊 我 是神 經 病

↑ ↑ H —L- M——— H —L- M———
我 是神經病啊 我 是神 經 病

↑ ↑ ↑ H —L- M——— ↓ ↓ ↓ ↓ H —L- M———
我 是神經病啊 我 是神 經 病

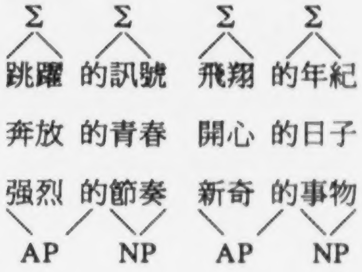
例(15)的四個韻行雖然都保持了音節的連調調型，但也很技巧地迴避了起伏調，故而每一個小句都是由高(H)、低(L)、中(M)三個調階來構成規律性的韻律。此外，當每一行結束以後，下一行的聲調都會升高一個音階(如朝上箭↑所示)，第四行的前句升至最高，而後句則突然驟降至比第一行更低的音階，固定聲調(register)的起落在這裏取代了起伏聲調(contour tone)的功能。不過，這種現象可能給人一個疑問：英語饒舌歌並沒有「固定聲調語言」的特性，何以此種韻律形式會出現於漢語饒舌歌裏？其實饒舌歌的本質是一種解放、自由的韻律，因此若有急欲擺脫傳統起伏聲調之束縛的傾向，也是可以理解的。

5. 虛詞的逆向附著

除了音韻類型的競爭之外，漢語饒舌歌亦表現出語言部門之間的互動關係，虛詞附著(function word cliticization)所導致的韻律緊張(metrical tension)

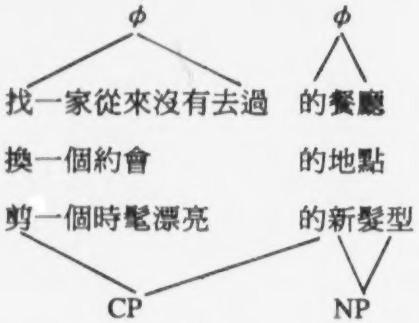
即是其一。虛詞在音韻上的行爲往往與實詞不同，趙元任(1968：第81頁) 指出，若干語助詞如「的」在句法上是跟著前頭的詞或詞組，但似乎又不屬於詞或詞組的某一部分。個中原因乃是由於單音節虛詞的音韻規律通常較不穩定，很容易附著於緊鄰的韻律成分，此種現象在某些漢語饒舌歌中尤爲明顯：

(16) (週末派：第11-13行；國語)


Σ Σ Σ Σ
跳躍 的訊號 飛翔 的年紀
奔放 的青春 開心 的日子
強烈 的節奏 新奇 的事物
AP NP AP NP

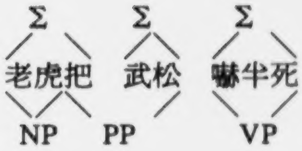
在句法的層次上，「的」屬於左方的形容詞片語(AP)，可是在韻律的層次上，「的」卻向右附著而與相關的音節組成音步。而虛詞的附著並不僅限於音步，也可能擴大運作在語調片語(intonational phrase)的層次：[註八]

(17) (週末派：第24-26行；國語)


φ φ
找一家從來沒有去過 的餐廳
換一個約會 的地點
剪一個時髦漂亮 的新髮型
CP NP

φ的標記表示語調片語。例(17)的「的」雖然在句法結構上是CP的中心語，但它不屬於第一個語調片語，而是向右附著到第二個φ範疇。蕭宇超(1991)也曾發現「把」字之類的虛詞音節在快速說話時會向左附著於相鄰的音步，如下例：

(18)

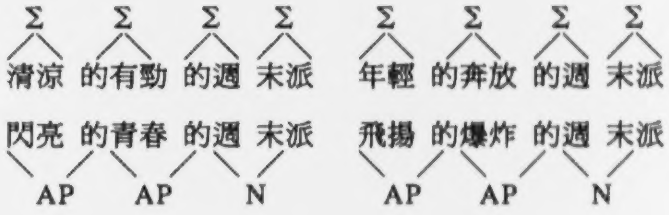

Σ
Σ
Σ
老虎把
武松
嚇半死
NP
PP
VP

例(16-17)的虛詞附著亦屬快速音韻規則，表面上看起來「的」與「把」的附著方向不同，前者向右，後者向左；不過仔細觀察相關的句法結構樹，我們不難發現虛詞的附著乃是朝著韻律結構與句法結構的「錯開」方向，此種錯開現象可以造成「韻律緊張」而使節奏格外鮮明。

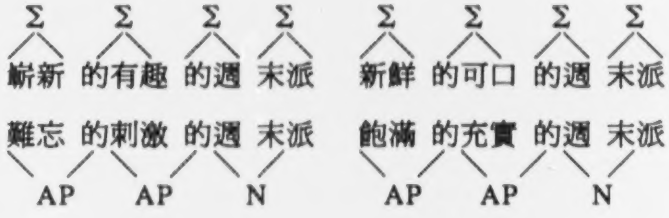
6. 直接成分的分解切割

結構上所造成的韻律緊張也可能發生在沒有虛詞的句法節點上。在一般的口語中，甚至在詩歌的格律中，句法上的「直接成分」(immediate constituent)必須優先構成音步，不可割開而分屬不同的音步。[註九] 可是漢語饒舌歌的另一項節奏特色即是在韻律上分解句法上的直接成分：

(19) (週末派：第8-9行；國語)


Σ Σ Σ Σ
清涼 的有勁 的週 末派
閃亮 的青春 的週 末派
AP AP N
Σ Σ Σ Σ
年輕 的奔放 的週 末派
飛揚 的爆炸 的週 末派
AP AP N

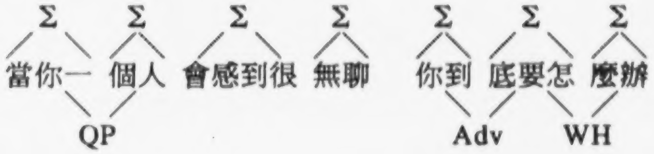
(20) (週末派：第29-30行；國語)


Σ Σ Σ Σ
嶄新 的有趣 的週 末派
難忘 的刺激 的週 末派
AP AP N
Σ Σ Σ Σ
新鮮 的可口 的週 末派
飽滿 的充實 的週 末派
AP AP N

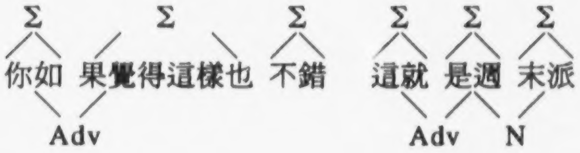
「週末」是句法上(或詞彙上)的名詞節點，也就是說，「週」與「末」是結構

關係非常緊密的直接成分，但是在韻律上卻被分解於不同的音步，營造出強而有勁的節奏感。當一個韻行不止一個直接成分在韻律上遭到分解時，其節奏的強烈自不在話下：

(21) (週末派：第2行；國語)


Σ Σ Σ Σ Σ Σ Σ
當你一 個人 會感到很 無聊 你到 底要怎 麼辦
QP
Adv
WH

(22) (週末派：第15行；國語)


Σ Σ Σ Σ Σ Σ
你如 果覺得這樣也 不錯 這就 是週 末派
Adv
Adv
N

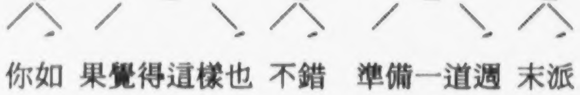
例(21-22)的韻行各有三個直接成分被音步所分解，韻律緊張可以說升到了最高點。這種分解效果比「的」附著所產生的節奏更強、更重。

7. 強調式的重音衝突

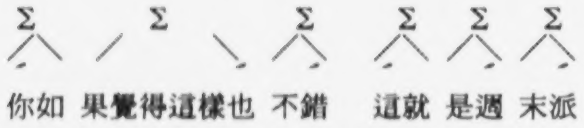
例(22)的高度韻律緊張不僅是結構上的理由，也牽涉到詞性與重音的關係。虛詞通常不讀成重音，除非是拘於格律或意味強調的時候，才會有接受重音的現象。試比較例(23)的(a)與(b)：

(23) (週末派：第14-15行；國語)

(a)

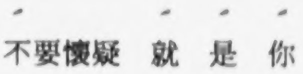

Σ Σ Σ Σ Σ
你如 果覺得這樣也 不錯 準備一道週 末派

(b)


Σ Σ Σ Σ Σ Σ
你如 果覺得這樣也 不錯 這就 是週 末派

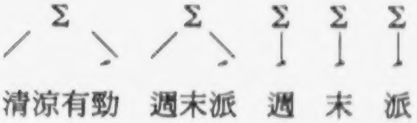
例(23)(a)的節奏比較規則，表現「右揚」的音步格律。但是到了(b)時，強度增大，而且第一個與第四個音步變成「左揚」的形式，使得「你」與「這」出現重音，和(a)形成格律上的對比。句首虛詞「你」的重讀也導致(b)在詞性上的韻律緊張，在節奏上有強調的效果。此種強調功能於例(24)更加明顯：

(24) (報告班長：第26行；國語)



這個例子除了詞性上的韻律緊張之外，也呈現了連續的「重音衝突」(stress clash)。黎博門與普林斯(1977)、普林斯(1983)等曾指出，英語之類的重音語言必須避免任何兩個相連的重音，而英詩中的韻律緊張主要即是仰賴此種重音衝突的設計(參閱海斯1989等)。例(24)出現三個相連的重音，使得節奏強度劇增，同時速度由快而慢；隨著速度減慢，音步的範疇亦由大變小，從四音節音步到單音節音步。例(25)更明確地告訴我們存在於節奏強度、速度、與韻律範疇之間的互動關係：

(25) (週末派：第1行；國語)

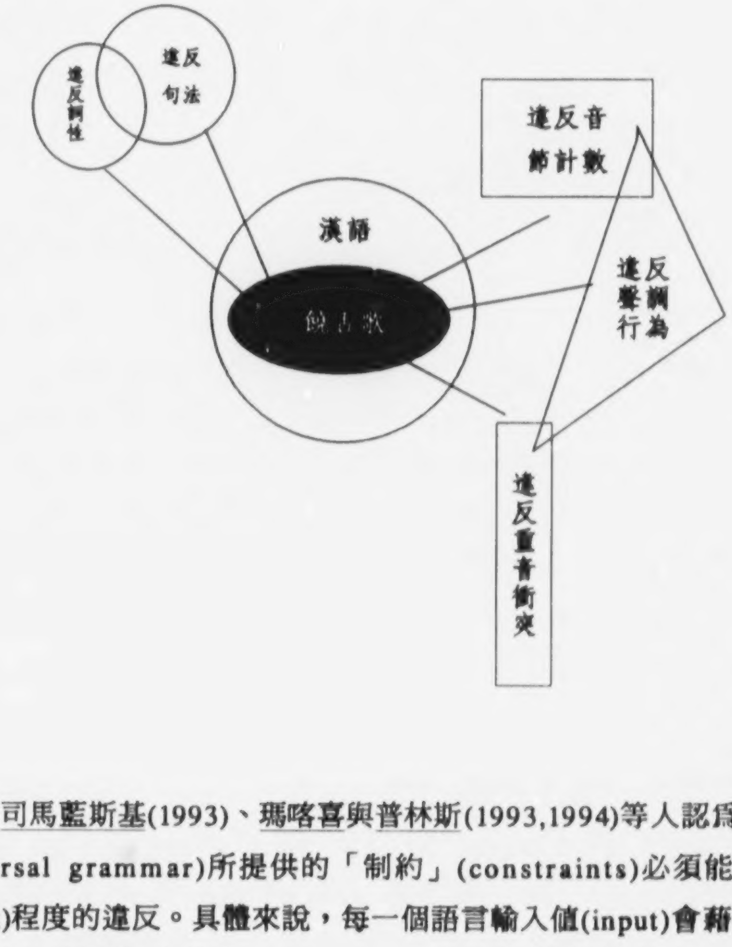

Σ Σ Σ Σ Σ
清涼有勁 週末派 週 末 派

此一韻行的音步由四音節、三音節、而至單音節。速度愈慢，音步愈小，強度則愈大。

8. 結論

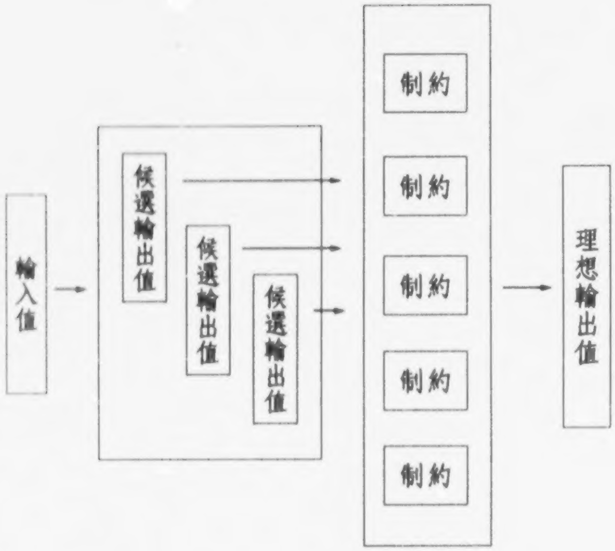
就音韻類型而言，漢語饒舌歌可以說是一種「判逆性」的語料，它的形成建立在一連串的違規，大致歸納如下圖：

(26)


違反詞性
違反句法
違反音節計數
漢語
饒舌歌
違反聲調行為
違反重音衝突

普林斯與司馬藍斯基(1993)、瑪咯喜與普林斯(1993,1994)等人認爲「通用語法」(universal grammar)所提供的「制約」(constraints)必須能夠容忍極小(minimal)程度的違反。具體來說，每一個語言輸入值(input)會藉由函數GEN對應到一組「候選輸出值」(candidate outputs)，其中違反最低等級的制約或是最少制約的輸出值即是「理想輸出值」(optimal output)，此即所謂的「理想機率理論」(Optimality Theory)。它的基本邏輯摘要如下：[註十]

(27)

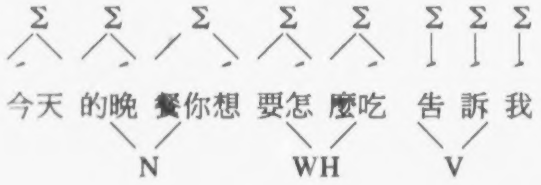

輸入值
候選輸出值
候選輸出值
候選輸出值
制約
制約
制約
制約
制約
理想輸出值

通用性的制約CON乃從語言個別差異(language-specific)的層面來分等級，從這個角度來看，漢語饒舌歌的理想輸出值似乎是違反最多或最高等級制的輸出值。譬如，句法直接成分(syntactic ICs)在不少漢語方言裏皆必須優先構成音步，但是在饒舌歌中則可優先分解；重音語言間通用的節奏制約乃是避免連續重音所產生的重音衝突，不過饒舌歌則毫無禁忌。以例(28)爲輸入值來試驗：

(28) 今天的晚餐你想要怎麼吃告訴我

只要將「IC法」與「節奏法」全部違反，即可選出節奏感十足的饒舌歌韻律：

(29)


Σ Σ Σ Σ Σ Σ Σ Σ
今天 的晚 餐你想 要怎 麼吃 告 訴 我
N
WH
V

註釋

*本文的報告乃是國科會專題計劃的部分研究成果，計劃編號NO. 83-0301-H-004-115，謹此感謝國科會的熱心支持。感謝普林斯教授(Professor Alan Prince)慷慨提供多篇OT論文，以及國科會計劃審查人神秘惠賜Generalized Alignment一文。感謝國立政治大學語言學研究所殷允美教授、左偉芳教授指教關於漢語重音的珍貴意見。感謝國立清華大學語言學研究所徐桂平同學溫馨提供「週末派」的音樂帶，以及林修旭同學豪爽提供許多語料。感謝福茂唱片公司邱先生費心說明「報告班長」與「週末派」的背景資料。

註一：例(1-2)乃是作者兒時常掛於口頭的念謠，是否有人收編不詳。

註二：有關「重音計時」與「音節計數」的觀念，請參閱佛萊(1955)、王力(1958)、亞伯坎比(1967)、亞倫(1975,1979)、歐樂(1979)、羅奇(1982)、鄭恆雄(1990)等等。

註三：「等時轉換」的觀念與爭議請參閱羅希斯特(1977,1979)、豪葛與牡秋禮(1987)等等。

註四：「跳」的作者與主唱者爲洛城三兄弟(L. A. Boy Z)，其中有兩位出生於美國，另一位於兩歲時移居美國，因此皆以英語爲母語。

註五：關於漢語重音的語音功能請參閱何艾珍(1976)、孟綜(1982)、陳果禮(1985)、左偉芳(1990)、蕭宇超與吳琇鈴(1994)等等。

註六：三聲的本調調型爲MLH，但在詞中呈ML，也就是所謂的半三聲，詳參鄭錦泉(1973)。

註七：臺語的「跳」爲陰去，本調調型亦作低平LL，詳參蕭宇超與潘科元(1994)。

註八：語調片語通常對應到最主要的停頓(major pause)。國語的語調片語功能請參閱史基琳(1990)，臺語的語調片語功能請參閱蕭宇超(1993)。

註九：IC音步的論點請詳參陳淵泉(1984)、史基琳(1986,1990)、蕭宇超(1991)等等。

註十：本文原已將「理想機率理論」(Optimality Theory)納入分析，然因篇幅過長而暫予取出、另文報告。

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Causative Compounds across Chinese Dialects:
a study of Cantonese, Mandarin and Taiwanese

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C.-T. James Huang, UC Irvine
Y.-H. Audrey Li, USC
C.-C. Jane Tang, Academia Sinica

1. Introduction

One of the controversies associated with resultative verb compounds (RVCs) centers around the level at which the causative RVCs are formed. There are three different approaches to the formation of RVCs: (a) a lexical approach (Li (1990, 1993) among others): causative RVCs are formed in the lexicon; (b) a syntactic approach (Huang (1992a)): causative RVCs are derived syntactically; and (c) a mixed approach (Cheng 1992): there are two types of causative RVCs, lexical and syntactic causatives; the former derived in the lexicon and the latter in the syntax. A related issue of RVC formation is the question of how close the representation of the compounds should reflect the meaning of the compound.

In this paper, we discuss causative RVCs in Cantonese, Mandarin and Taiwanese. We show that the difference in the formation of causative RVCs between Taiwanese on the one hand and Cantonese and Mandarin on the other is reflected in a restriction on the definiteness of the postverbal object NP. We argue that the difference is a result of different levels of causative RVC formation: in the lexicon in Taiwanese and in the syntax in both Cantonese and Mandarin. We further show that the lexical derivation of causative RVCs in Taiwanese is part of its overall "analytic" nature by discussing constructions involving the light verb DO as well as typical causative constructions. In comparison with Cantonese and Mandarin, the more "synthetic" dialects, the representations in Taiwanese are rather "transparent" with respect to its meaning composition.

2. Causative constructions

As frequently noted in the literature, RVC formation is very productive in Mandarin Chinese. Long lists of such compounds are readily available, such as *da-si* 'hit-dead'打死, *qi-lei* 'ride-tired'騎累, *ti-dao* 'kick-fall'踢倒, *zhui-lei* 'chase-tired'追累, *qi-si* 'angry-dead'氣死, *lei-si* 'tired-dead'累死, *zui-dao 'drunk*-fall'醉倒 etc. Such productivity is shared by many other dialects of Chinese. For instance, all the examples just mentioned have the exact counterparts in Cantonese and Taiwanese.

Syntactically, these RVCs can be either intransitive (i.e. in the pattern [NP_1 RVC]) or transitive (i.e. in the pattern [NP_1 V NP_2]):

(1) Ta he-zui-le. 他喝醉了 unergative
he drink-drunk ASP
'He drank himself drunk.'

(2) ta lei-si-le 他累死了 ergative
he tired-dead-ASP
'He is extremely tired.'

(3) Ta da-si tamen le. 他打死他們了 transitive
he hit-dead them ASP
'He hit them dead'

(4) Zhe-jian shi lei-si tamen le. 這件事累死他們了 causative
this-CL matter tired-dead them ASP
'This matter tired them to death.'

The two transitive patterns are further divided into transitive and causative, as shown in (3) and (4). (see Cheng and Huang 1994 and later discussion in this paper for the distinction between them). These sentences have their exact counterparts in Cantonese:

(5) keoi jam-zeoi zo
he drink-drunk ASP
'He drank himself drunk.'

(6) ngo mun-sei la
he bored-dead PART
'He is extremely bored.'

(7) keoi da-sei-zo keoidei
he hit-dead-ASP them
'He hit and killed them.'

(8) li-ceot hei mun-sei keoidei
this-CL-movie bored-dead them
'This movie caused them to be very bored.'

Taiwanese also has the counterparts (as shown in (9)-(11)), except, unexpectedly, for the causative counterpart in (4), as shown in (12) (see Hsieh 1993):

(9) i lim-tsui a.
he drink drunk ASP
'He drank himself drunk.'

(10) i thiam-si a
he tired dead ASP
'He is extremely tired.'

(11) i ´phak-si in a.
he hit-dead them ASP
'He hit them dead'

(12) *tsit-tsan taitsi thiam-si in a.
this-CL matter tired dead them ASP
'This matter tired them to death'

The contrast between (11) and (12) shows that it is not the case that Taiwanese simply does not allow the RVCs to take a postverbal object. Instead, it appears that the "transitive" use of the RVC contrasts with its "causative". Following Cheng and Huang (1994), we assume that there are two types of transitive RVCs: one with the first verb of the RVC denoting activities and the other, states/change of states. The first type, illustrated in (3) and (11), indicates that some action of an agent results in a theme being in a certain state (for instance, the action of hitting is done by the agent *i* 'him' in (11) resulting in the theme *in* 'they' being dead). The second type, illustrated in (4) and (12), denotes a causer (NP1) bringing about a causee (NP2) being in a certain state. In the case of (12), *tsit-tsan taitsi* 'this matter' is the causer and *in* 'them' is the causee. Cheng and Huang call the type illustrated in (11) "Transitive" and (12) "Causative." The subject of the

Transitive type is an actor and the subject of the Causative is a causer. Pertinent to our discussion here, the Transitive constructions allow a postverbal object but not the Causative constructions, as illustrated further by the following examples:

(13) a. i tsau kau in tshu a
he run arrive his home ASP
'He ran and arrived his home.'

b. i tshit tshingkhi hit-tsiak to a.
he wipe clean that-cl table ASP
'He wiped that table clean.'

(14) a. *tsit-tsan taitsi kiaN tsau hit-e lang a.
this-CL matter scare away that-CL person ASP
'This matter scared off that person.'

b. *tsit-kuan tsiu tsui to hit-e lang a.
this-cl wine drunk fall that-CL person ASP
'This bottle of wine made that person very drunk.'

These examples seem to suggest that Transitive constructions involving RVCs can be found in Taiwanese as well as Mandarin and Cantonese. However, Taiwanese, in contrast with Mandarin and Cantonese, does not have Causative constructions involving RVCs. This is not quite correct, however. Complicating the issue is that sentences like (12) and (14a-b) can be acceptable, if a different type of postverbal objects is chosen:

(15) a. tsit-tsan taitsi thiam si (tsit-tun) lang a.
this-cl matter tired dead one-pile person ASP
'This matter tired many people to death.'

b. tsit-tsan taitsi kiaN tsau (tsit-tun) lang a.
this-cl matter scare away one-pile person ASP
'This matter scared off many people.'

c. tsit-kuan tsiu tsui to (tsit-tun) lang a.
this-cl wine drunk fall one-pile person ASP
'This bottle of wine made many people very drunk.'

Comparing (12) and (14a-b) on the one hand and (15a-c) on the other, we note that the minimal difference between the two sets lies in the type of the object NPs: in the former set, the NPs are definite expressions (pronouns and NPs with a demonstrative); whereas, in the latter set, the NPs are non-definite expressions. The following generalization thus emerges:

(16) Postverbal objects of Causative constructions in Taiwanese cannot be definite.

3. Postverbal constraint on definiteness

Generalization (16) at the first glance appears to be quite idiosyncratic. However, the literature does not seem to lack in similar observations. In fact, generalization (16) reminds us of a broader postverbal constraint in Mandarin Chinese discussed in, for instance, Li and Thompson (1981), Huang (1994) and Tang (1990) concerning sentences containing a postverbal object NP and a duration (D) or a frequency(F) phrase. The pattern [V object D/F] requires the object NP to be definite (a referential NP in Huang's term):

(17) a.*Wo kan-le (henduo) shu liang ci/liang-ge zhongtou.
I read-ASP many book two times/two-CL hours
'I read (many) books twice/for two hours.'

b. Wo kan-le naben shu liang ci/liang-ge zhongtou.
I read-ASP that book two times/two-CL hours
'I read that book twice/for two hours.'

The effect of definiteness (referentiality) of the object NPs on the acceptability of the sentences is not only manifested in the Mandarin [V object D/F] constructions, but also in other phenomena in many other languages such as word order variations in Hungarian and agreement requirements in Hindi. In Hungarian for example, a sentence with a non-referential object occurs in an SOV order whereas the neutral order for a sentence with a referential object is SVO, as shown in (18) (see Maracz 1989 among others).

(18) a. a fiu levelet ir (SOV)
the boy letter-ACC writes
'The boy is writing a letter.' (The boy is busy letter-writing.)

b. a fiu ir egy levelet (SVO)
the boy writes DET letter-ACC
'The boy is writing a [specific] letter.'

c. a fiu irja a levelet (SVO)
the boy writes-Agr$_0$ the letter-ACC
'The boy is writing the letter.'

Similarly, in Hindi, a sentence with a definite object NP shows object agreement on the verb whereas indefinite and non-referential object NPs do not trigger object agreement on the verb (Mahajan 1990):

(19) a. raam-ne kitab paRhii
raam-ERG-(m) book read-PERF-f-sg
'Ram read the book.'

b. raam ek kitab paRhegaa
raam-(m) a book read-fut-m-sg
'Ram will read a book.'

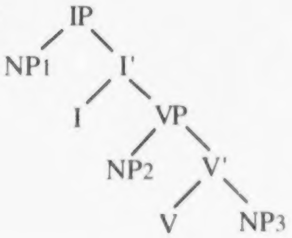
Mahajan considers that a definite object NP must move into the Spec of an object agreement phrase (Agr^{o}P) but an indefinite opr non-referential NP must remain as sister of V.

In the spirit of Mahajan (1990) among others, Huang (1994) proposes to account for the contrast in (17) in terms of the base-generated position of object NPs. In particular, a referential (definite) object NP is base-generated in the SPEC of VP (sister to V') (in the NP$_2$ position in (20)) and a non-referential (non-definite) object is generated as sister to V (in the NP$_3$ position in (20)):[1]

---

[1] A subject may be base-generated as the SPEC of VP (the Internal Subject Hypothesis, see, for instance, Fukui 1986, Koopman and Sportiche 1990 among others). If this hypothesis is adopted, we will need more layers of VPs in the structure (see Larson 1988). However, it does not affect the main point here that a definite NP is base-generated in the SPEC position and a non-definite NP is base-generated as sister to V.

(20)



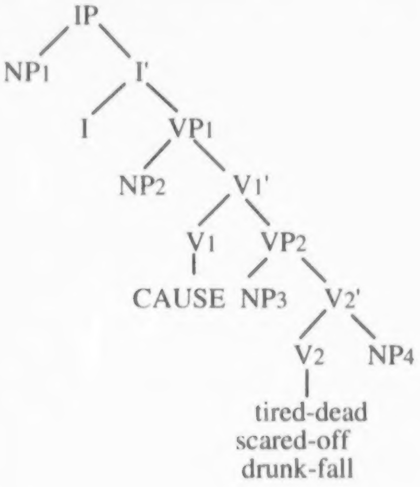
To illustrate with the sentences in (17), the definite object *naben shu* 'that book' in (17b) occurs in the SPEC of VP (NP$_2$) position. The D/F phrase can occur in NP$_3$ position (see Larson 1988). After V raises outside the VP, sentence (17b) will be derived. On the other hand, if the object NP is indefinite (non-referential), it is generated in the NP3 position, which is competed for by the D/F phrases. (17a), thus, is not possible. The contrast between (17a) and (17b) is thus a manifestation of the constraint on the position of object NPs:

(21) A definite object NP occurs in the SPEC of VP position and a indefinite object NP occurs within V' (as sister to V).

4. Analysis

With (21), we can proceed to account for the generalization in (16) which prohibits a postverbal definite NP in a Taiwanese Causative construction. Along the lines of Hsieh (1993), Huang (1992b), Wu (1994) and Zou (1993), we take (22) to be the structure of a Causative sentence (such as (15a-c)):[2]

(22)



For the sentences in (15a-c), the object NP *tsit-tun lang* 'many people' occurs in NP$_4$ position, since it is indefinite. V$_2$ moves up to V$_1$ CAUSE and combines with it to become a causative verb, deriving the well-formed sentences in (15a-c).

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[2] The compound verb *thiam-si* 'tired-dead', *kiaN-tsau* 'scare-off' and *tsui-to* 'drunk-fall' may be further analyzed as consisting of two VPs, which will not affect the analysis here.

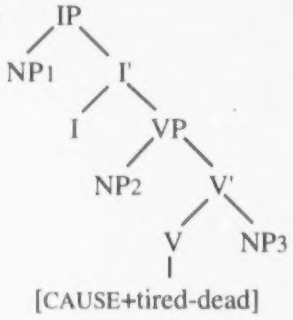
Turning to (12) and (14a-b), the causee is a definite NP. It should be base-generated in the SPEC position, NP_3. Verb movement (V_2 to V_1) applies, as in the case involving indefinite NPs since it is an obligatory process to create a causative verb. This movement, however, would create the verb chain [V_1, V_2]. The minimal domain for the causative verb would therefore be VP_1, not VP_2. That is, with respect to the object NP position constraint, we can no longer consider only V_2, instead, we need to consider the chain [V_1, V_2]. In other words, the Spec position that matters is no longer NP_3 but NP_2 of VP_1. After verb movement, the definite NPs in (12) and (14a-b) occurs within the projection of V_1' rather than outside of the V_1', violating the constraint on where a definite object NP can occur as stated in (21). Note that V-movement to CAUSE does not create problems for (15a-c), since the indefinite object NP are still within V_1'. (21) thus accounts for the contrast between (12) and (14a-b) on the one hand and (15a-c) on the other. The generalization in (16) is captured.

5. Towards dialectal differences: Syntactic vs. lexical

The discussion so far, however, raises the question of why the counterparts of the Taiwanese (12) and (14a-b) in Mandarin and Cantonese are acceptable, as illustrated by the acceptability of (4), (8), especially considering the fact that the postverbal definiteness constraint applies in Mandarin and Cantonese as well. An answer to this problem may be found in the discussion in the literature concerning the level at which a causative compound verb is formed.

Note that the analysis of the Taiwanese causative constructions assumes that the causative verb formation takes place at the syntactic level: V-movement takes place at the syntactic level, creating a structure where the definite object NP is within V', rather than the SPEC of its V. In other words, in Taiwanese, the RVC *thiam-si* 'tired-dead' is only a resultative verb in the lexicon and its causative counterpart is derived in syntax. On the other hand, the causative verb formation may take place at the lexical level, as suggested in Li (1990) among others. In other words, a surface verb such as 'tired-dead' may in fact be ambiguous: it can be the resultative 'tired-death' or it can be the causative 'CAUSE + tired-dead'. The former has one argument [theme] and the latter, two arguments [causer, theme]. The causative verb, with its two arguments [causer, theme], can be projected into the following structure, just like any two argument verbs such as 'hit' or 'eat':

(23)



The causer argument is in NP_1 position. The theme argument is in NP_2 or NP_3 position, depending on whether the theme NP is definite or not.

We suggest that Cantonese and Mandarin causative RVCs are derived lexically. That is, there is no verb-movement to a CAUSE verb in syntax, as we have seen in Taiwanese. In contrast, a sentence such as (4) in Mandarin or (8) in Cantonese will be generated in exactly the same way as a sentence like 'John hit Mary' or 'John ate lunch', since the causative verb is treated as a lexical item taking two arguments. Given a structure such as (23) for the causative sentences in (4) and (8) as well as typical transitive sentences, the definite object NP will be generated in NP_2 whereas the indefinite object NP will be in NP_3. Since there is no further VP projection to "extend" the domain of the verb, NP_2 will remain as the Spec of the VP even after the verb raises out of the VP to Infl. This entails that what we are dealing with in the case of syntactic causatives (the Taiwanese case) is a VP-shell (Larson 1988), the lower VP is part of a bigger VP. In contrast, with verb to Infl movement, we have a simple case of verb movement not involving VP-shells and the status of the NP positions does not change.

To sum up, Taiwanese derives the causatives syntactically and therefore given the extension of VP domain in a VP-shell, postverbal definite NPs are not allowed. In contrast, Cantonese and Mandarin have lexical derivation of causatives and thus the syntactic restriction of definite object NPs is always obeyed.

6. Further evidence

In this section, we discuss two additional differences between Taiwanese and Mandarin.[3] We show that both differences can be treated on a par with the analysis that we have proposed for the causatives.

6.1. The verb(s) **DO** 做

Consider the sentence in (24) in Mandarin and its Taiwanese counterpart in (25):

(24) ni ku ni de 你哭你的
you cry you DE
'You go ahead and cry (and it doesn't concern me).'

(25) li tso li khao 你做你哭
you do you cry

However, these two ways of expressing a roughly similar proposition are not interchangable in these two languages, as shown by the following two ungrammatical sentences.

(26) *ni zuo ni ku 你做你哭
you do you cry

(27) *li khao li e 你哭你的
you cry you E

We propose that the distinction exhibited in (25) vs. (26) and (24) vs. (27) centers around the overt and covert light verb Do in these two dialects.

Consider first how (24) is derived. Following Huang (1992b), we propose that Mandarin has a light verb Do which takes a gerundive IP:

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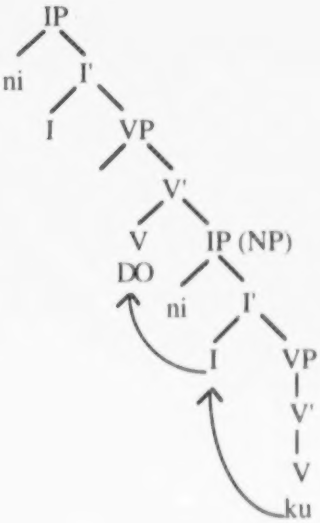
[3] Cantonese counterparts are exactly the same and we will not discuss them here.

(28)



In (28), due to the presence of the empty light verb Do, the gerundive verb *ku* 'cry' moves to replace Do via the lower gerundive I. And due to the gerundive nature of the IP, Infl cannot assign nominative Case to the NP in its Spec, *ni* 'you', the genitive Case marking is applied and we have an output (24).

The Taiwanese example in (25) represents an overt realization of the light verb Do. In this case, the light verb Do happens to be homophonous with the regular verb *tso* 'do'. If we replace the empty light verb in (28) with the overt light verb *tso* 'do', we obtain an output such as (25). Due to the presence of the overt *tso*, there is no need for movement and by Economy of Derivation, movement cannot take place. Thus, a sequence such as (29) is ruled out:

(29) * li tso khao li (e) 你做哭你（的）
you do cry you E

Furthermore, (27) is not possible because Taiwanese does not have a covert light verb Do on a par with the one in Mandarin. Then a structure such as (28) with a null light verb with subsequent raising of the verb will not be possible in Taiwanese and hence the ungrammatical (27).

We have seen that in (25) that there is no genitive Case marking on the lower *li* 'you'. We propose that the overt light verb *tso* 'do' exceptionally Case marks (ECM) the subject *li* 'you' of the gerundive clause. There is thus a difference between the overt light verb and the covert light verb: the former can ECM the lower subject whereas the latter cannot. Furthermore, in the case of Mandarin with a covert light verb, after the movement of the lower verb to the light verb, there is still no structural Case assignment. This is due to the fact that verbs such as *ku* 'cry' does not have a structural case to assign since it is an unergative verb.

These cases can be compared with sentences involving an object in the gerundive clause, as shown in (30) and (31).

(30) a. ni kan ni de shu
you read you DE book
(i) 'You go ahead and read.'
(ii) 'You read your book.'

b.*ni zuo ni kan shu
you DO you read book
'You go ahead and read.'

(31) a. li tso li thak tse
you DO you read book
'You go ahead and read.'

b. li thák li-e tse
you read your book
(i) 'You read your book.'
(ii) *'You go ahead and read.'

The contrast in (30) is the same as the one shown between (24) and (26). Note that even though the verb *kan* 'read' can assign accusative Case, it has only one Case to assign (to its object *shu* 'book'). Thus, after it raises to the covert light verb Do, it no longer has any Case to assign to the gerundive subject *ni* 'you'. It should also be noted that we are specifically talking about the interpretation of (30) as indicated rather than the possessive reading of *ni-de shu* 'your book', which is also possible. This is in fact the only possible reading for (31b). Thus, (31b) is not a counterexample to our claim. The impossibility of interpreting (31b) as (30a-i) is due to the same reason as the impossibility of (27).

6.2. V--ho--V

There is one further contrast between Taiwanese on the one hand and Mandarin on the other which supports our claim that Taiwanese is more 'transparent' than Mandarin and Cantonese. This involves the contrast shown in (32) and (33) involving the *ba/ka*-construction.

(32) a. lan ka i pa si
we BA him hit-dead
'We hit him dead.'

b. lan ka i pa ho (i) si
we BA him hit give him dead
'We hit him dead.'

(33) a. women ba ta da-si le
we BA him hit-dead ASP
'We hit him dead.'

b.* women ba ta da gei (ta) si
we BA him hit give him dead

The contrast shown between (32b) and (33b) shows that the causation expressed by *pa-si* 'hit-dead' can be "spelled out" in a transparent way in Taiwanese but not in Mandarin. In (32b), we see that *pa-si* 'hit-dead' can be further "divided" into *pa-ho-si* with the causative being overtly expressed. However, as shown in (33b), this is impossible in Mandarin, showing that such relations can only be expressed in a covert way in this dialect.

7. Conclusions and Theoretical Implications

In this paper, we have studied an area of comparative grammar across three Chinese dialects: Mandarin, Taiwanese and Cantonese, and showed that the observed systematic differences among these dialects in the syntax of causative sentences and other related constructions can be described with considerable insight within a formal model of Universal Grammar and linguistic variation. In particular, treating dialectal variations as instances (on a smaller scale) of normal linguistic variation, we have assumed that the computation system of a language is invariant across languages and dialects, the seemingly radical superficial differences being reducible to the morphological or lexical variations among them. In particular, whereas all dialects compared have a lexicon that contains RVCs, only Mandarin and Cantonese have lexical causative compounds. (Pure) causative compounds in Taiwanese must originate in the lexicon as ergative (inchoative) compounds. Their causative use is permitted only when an ergative compound is underlyingly embedded under an abstract verb CAUSE, to which the ergative verb compound must raise. This causes a definite/referential object to fall within the domain of a V^0, thus exhibiting the definiteness effects observed in this paper:

(34) a. *chit tsan taichi thiam-si hit-e lang a.
this CL matter tired-die that-CL person PART
'This matter caused that person to be tired to death.'

b. *hit kuan chiu tsui-to Li SiansiN a.
that bottle wine drunk-fall Li Mr. PART
'That bottle of wine got Mr. Li to be so drank as to fall.'.

(35) a. chit tsan taichi thiam-si go-pa-gua lang.
this CL matter tired-die 500-plus person
'This matter got 500-plus people to be tired to death.'

b. hit kuan chiu tsui-to chin-choe lang.
tat bottle wine drunk-fall quite-many person
'That bottle of wine got many people to be drunk and fall.'

No similar definiteness effect is observed in Mandarin or Cantonese because the causative compounds may be lexically derived, and hence are not embedded under CAUSE, and hence a definite object in the Spec of VP would not be considered to be within V' due to verb to verb movement in VP-shell structures.

(36) a. zhe-jian shi lei-si nei-ge ren le.
that-CL matter tired-dead that-CL person PART
'This matter got that person tired to death.'

b. nei-ping jiu zui-dao-le Lisi.
that-CL wine drunk-fall-ASP Lisi
'That bottle of wine got Lisi so drunk as to fall.'

There is also no definiteness effect if an overt causative verb appears above the ergative compound, since an overt verb like *ka, ho, hai* 'cause' takes a proposition (a clausal category) but not an event (an ergative VP) as its complement and does not force the definite object to be a complement of a (complex) V^0.

(37) a. chit tsan taichi ka/ho/hai hit-e lang thiam-si a
this CL matter cause that-CL person tired-die PART
'This matter caused that person to be tired to death.'

b. hit kuan chiu ka/ho/hai Li XiansiN tsui-to a.
that bottle wine cause Li Mr. drunk-fall PART
'That bottle of wine caused Mr. Li to be so drunk as to fall.'

With respect to definiteness effects in causative compounds, then, Taiwanese is characterized as being more of an analytic language whereas Mandarin and Cantonese are more synthetic. This contrast is corroborated by other comparative differences in periphrastic causative constructions, and in the syntactic manifestation of the semantics of Davidsonian action sentences. Thus, whereas in Mandarin action sentences the verb typically undergoes head-movement into the position of a higher light verb, thus obscuring the existence of an "event place" in the logical form of such sentences (as in (38)), in Taiwanese the light verb typically manifests itself overtly, as in (39)):

(38) a. ni san ni-de bu, wo shui wo-de jiao.
you take your talk, I sleep my sleep
'You go on with your strolling, and I kept on sleeping.'

b. ta ku ta-de, wo shui wo-de.
he cried his I slept mine
'He kept crying and I kept sleeping.'

(39) a. li tso li san-po, gua tso gua khun.
you DO you stroll I DO I sleep
'You went on with your strolling, I kept on sleeping.'

b. li tso li khao, gua tso gua khun.
you DO you cry I DO I sleep
'You keep crying and I will go on with my sleep.'

In the analysis of each of these differences, we have assumed that the dialects under consideration differ only the contents of their Lexicons, but share a Computation System that operates according to general principles throughout these dialects. (In the causative cases, the existence of an abstract CAUSE and the absence of pure causative compounds distinguish Taiwanese from Mandarin and Cantonese. In the case of Davidsonian action sentences, the existence of overt light verb and its absence again cuts across these dialects. These results seem quite desirable and optimal, in the sense that our theory of linguistic variation makes use of little more than what appears to a "virtual conceptual necessity" (that languages clearly must differ in their morphologies), and it seems possible to assume that language variation is reducible to, and in fact limited to, morphological variation. This conception of parametric theory is clearly more optimal than one that directly stipulates, say, the existence of definiteness effects in certain grammatical constructions in one dialect but not in another, or that of a given head-movement process in the computational system of one language but not another.

In other words, on a descriptive level, we can state the generalization, based on our analysis, that Taiwanese is more "analytic" and more transparent, and Mandarin and Cantonese more "synthetic" and more opaque, in that more goes on in the lexicon in Mandarin and Cantonese than in Taiwanese. But from the point of view of a more restrictive parametric theory, this generalization can be reduced to mere morphological differences among languages, in particular, in the distribution of certain grammatical lexical items.

Indeed, this "minimalist" parametric theory also appears to be the most optimal when it comes to the major differences that distinguish among languages of different typological types. One well known typological difference among languages is the existence of "Wh-movement" in the formation of constituent questions. In early linguistic literature, this typological difference was directly taken to reflect in a variation in the design of the computation systems of individual languages: some languages possess the rule of "Wh-movement" and others do not, this in turn following from the elementary assumption that languages may differ in the distribution of certain substantive and formal constraints. A parametric theory of this sort, however, went beyond observational adequacy. As Huang (1982) shows, this conception of the typology of constituent questions misses important generalizations about the cross-linguistic similarities *and* differences with respect to subcategorization, scope interpretation, and movement constraints (Subjacency, CED and the ECP). Huang's suggestion was to conceive of the *wh*-movement parameter in a different way: all languages share the substantive universal of having a *wh*-movement rule, but differ in where that rule may apply: if not in overt Syntax than in Logical Form. The hypothesis of *wh*-movement as a substantive universal explained the similar properties shared by *wh*-constructions across all languages, and their differences in where the rule applies account for observed differences among these languages with respect to locality constraints, etc. This conception of the typology of *wh*-constructions enjoys a level of descriptive adequacy that previous conception did not in that it captures certain linguistically significant generalizations that might have been treated as accident properties of languages. This conception of parametric theory is not optimal, however, since the parametric differences, being in terms of the components of a computation system where a given rule may apply, relies on an assumption that is not itself of virtual conceptual necessity. Furthermore, although the issue of learnability does not arise, it is not explained why *wh*-movement may apply overtly in English, but only covertly in Chinese--rather than, say, the other way around.

More recent work offers a promising line of inquiry that has the prospect of attaining explanatory adequacy. One line of research, undertaken in Cheng (1991), relates the lack of overt *wh*-movement in Chinese-like languages to the existence in them of certain functional elements, in particular, question particles occupying the position of C in syntax. This assumption explains the clustering of properties in one language and their joint absence in another, and is relatively optimal in that it reduces superficially vast syntactic differences to a morphological difference in the distribution of certain functional categories. In current work, furthermore, Tsai (1994) proposes that the obligatoriness of overt *wh*-movement in English, and its obligatory procrastination until LF in Chinese, can be directly tied to a morphological difference in the internal structure of the *wh*-words themselves. In English, *wh*-words have a microscopic syntax with a self-contained operator-variable structure; they are therefore inherently interrogative operators, and hence are subject to movement, given the general assumption that operators must occur in operator position, with expected locality effects. In Chinese, on the other hand, *wh* words are open categories, i.e., polarity items that are underspecified for their interrogative vs. quantificational features. As such, they are not inherently identified as operators, and not subject to overt syntactic movement. Their interpretations are determined by the licensers that c-command them elsewhere within a sentence, outside of their internal structure. Thus the *wh*-words are on a par with variables that are unselectively bound in the sense of Heim (1982) (cf. Lewis (1975)). In the case of the interrogative interpretation, it is assumed that the *wh*-in-situ is bound by a (base-generated) null operator. The vastly different syntactic difference between Chinese and English thus boils down to the difference of the possibility of base-generating a null operator, of whether the null OP is in the lexicon of either language. Chinese has null operators for all operator positions, but English has none, except those cases where the null operator is strongly bound (in the sense of Chomsky (1986), i.e., in parasitic gap constructions, *tough* constructions, certain relatives, etc.).

This difference in the presence of a non-strongly bound null OP has further implications. For example, it also underlies the "null topic parameter" of the sort described in Huang (1984) concerning the distribution and interpretation of certain null arguments in Chinese and German. The theory, which is in spirit a minimalist theory of linguistic variation, thus only explains why English and Chinese should differ not only with respect to the existence of overt *wh*-movement, but also with respect to the distribution and interpretation of certain null arguments.

Two additional theoretical implications of our analysis are worth mentioning: First, our analysis supports the traditional distinction between resultatives and causatives, against recent attempts to treat them uniformly. As S. Huang (1974) argued, both the resultatives and causatives carry with them the semantics of causation, but a distinction is still necessary, between what he terms "event causatives" (resultatives) and "factive causatives" (causatives). Recently, Sybesma (1992) argues that both construction types (what he calls "canonical resultatives" and "causatives") should be treated alike, as forming a typical ergative-causative paradigm. What we have shown here is that the three dialects under consideration do not differ with respect to their syntax of the resultatives, but do so with respect to their syntax of causatives. For us, the resultatives constitute an unergative-transitive paradigm, whereas the ergatives and causative compounds constitute a separate paradigm. The resultatives have an inherent semantics of causation, but they do not have a syntax of causation; only the (pure) causatives do. Our analysis, if correct, thus provides important evidence in defense of the traditional distinction, against the uniform-treatment hypothesis of Sybesma (1992).[4]

Finally, if our analysis is on the right track, we have provided additional support for the hypothesis, advanced in Johnson (1992), that there is a process of movement that invariably raises the verb out of VP into a higher head position, as a universal principle and irrespective of the morphological properties of the functional projections of a particular language (such as the French-English contrasts of the sort considered in Emonds (1976) and Pollock (1989). This assumption is necessary to allow for cases of grammatical resultatives and (lexically derived) causatives taking definite postverbal NPs as their objects. The existence of such a process in Chinese has also been demonstrated in Huang (1992b) and in Kung (1993) in accounting for the definiteness effects in connection with the occurrence of objects with certain duration and/or frequency expressions.

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[4] See Cheng and Huang (1994) for additional arguments in favor of the traditional distinction.

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A Syntactic Typology of Formosan Languages
-- Case Markers on Nouns and Pronouns

Paul Jen-kuei Li

1. Introduction

1.1 Theoretical Considerations

Studies of language typology can certainly enhance our knowledge of language in general. These studies are closed related to studies of language universals; see, for example, Greenberg (1966), Comrie (1989). Moreover, studies of language typology are also related to studies of language genetic relationships, esp. to the problems of subgrouping.

What significant features should we look for in language typology ? Is there a hierarchy (i.e. degrees of significance) in typological features ? Is so, what is it ? Questions such as these can be raised and discussed.

1.2 Previous Works on Formosan Languages

Most of the previous publications on Formosan languages deal with an individual language or dialect, while only a few are cross-linguistic studies. The few cross-linguistic studies are either phonological, e.g., Tsuchida (1976) and Ferrell (1979b), or limited to a single syntactic feature covering only a few languages. For example, Ferrell (1979a) compares only the construction markers in several Formosan languages, while Starosta (1974) compares only the causative verbs in six Formosan languages: Amis, Bunun, Rukai, Saisiyat, Sediq and Tsou. More recently, Starosta's (1988) paper "A Grammatical Typology of Formosan Languages" is much more comprehensive. It deals with several syntactic features, including word order, topicalization, auxiliary verbs and pronoun contraction, illustrated with examples from eight Formosan languages: Amis, Tsou, Saaroa, Atayal, Sediq, Bunun, Saisiyat and Puyuma. However, there is limited data in the paper, due to limited space and limited field work that has been done on some of the languages. Moreover, these studies may be somewhat misleading as they are often based on very innovative dialects, such as the Squliq dialect of Atayal, which have lost many important grammatical features.

1.3 Purpose of This Study

In this study we shall try to cover as many Formosan languages as possible. We shall pick a more conservative dialect for each language. Ideally a great many syntactic features, including case markers, personal pronouns (both long and short forms), tense and aspect, focus, word order, topicalization, nominalization, relativization, interrogatives, negatives, imperatives, and so on, should all be examined, as most of these features are closely related. In so doing, we can compare the syntactic similarities and differences among Formosan languages. Such a cross-linguistic study will have a bearing on their genetic relationships and may resolve some problems of subgrouping.

To take noun phrase as an example, nouns and pronouns are marked for case in these languages. How many different cases are there in each language ? In some languages like Sediq and Saaroa, there are only two different cases for nouns: nominative and oblique. In some other languages, there are three different cases for nouns: nominative, accusative and genitive. In still some other languages like Amis, there are four different cases: nominative, accusative, genitive and locative. In fact, even more different cases may be distinguished in a few languages such as the Mayrinax dialect of Atayal. Some of these languages distinguish between common noun and personal noun as in Philippine languages, while the others make no such distinction. All Formosan languages can be divided into two main types, as based on whether such a distinction is made.

In western Austronesian languages, a relative clause can only modify the subject of the sentence. Such a restriction has been suggested (Ross 1994) as inherited from Proto-Austronesian. Some Formosan languages observe the same restriction, whereas in a few others such as Tsou a relative clause can also modify an object. Again, all Formosan languages can be divided into two main types, as based on such as distinction. Furthermore, we may object to the hypothesis that only the subject can be relativized and that it is a syntactic feature attributable to the stage of Proto-Austronesian.

If we compare Formosan languages type by type, we can see which of these languages share more syntactic features with each other and which of them share fewer.

In this paper, all examples for all Formosan languages are based on my own field notes, unless indicated otherwise.

2. Case Markers on Nouns and Pronouns in Formosan languages

Like western Austronesian languages, in most Formosan languages a noun is modified by a case-marking particle, which may or may not distinguish between a common noun and personal name (including a few kinship terms). All personal pronouns are inflected for case, and there may be different sets of case, including nominative, accusative, genitive, locative or oblique, depending on the language or dialect.

The term "case marker" is called "construction marker" by other authors such as Ferrell (1979a), Tsuchida (1976, 1980).

2.1 Atayal

The Mayrinax dialect of Atayal is conservative not only in phonology and morphology, but also in syntax. It retains many grammatical particles that have been lost in the Squliq dialects (see Egerod 1965, 1966, 1993). It has an obligatory case marker for each noun in every sentence, as in:

A1. hibag-un na? buli? ni? yaba? ku? qulih.
cut PF Ins knife Gen father Nom fish
'The fish was cut with a knife by a father.'
A2. kabaux cu? pila? ki? hakiŋ ?i? tali?.
AF-borrow Acc money Acc name Nom name
'Tali? borrowed some money from Hakiŋ.'
A3. situiŋ nku? ?ulaqi? ga?, rahuwal cu? matanah.
clothes Ben child Top big Acc red
'As for the clothes for the child, they are large and red.'
A4. si-baiq mu cku? ?ulaqi? ku? pila?.
BF-give my Dat child Nom money
'The money was given to the child by me.'

Mayrinax has the following case-marking particles:

	Nom	Acc	Gen	Ben/Agt	Dat	Ins	Loc
Common:	ku?	cu?	na?	nku?	cku?	na?	i?
Personal:	?i?	ki?	ni?	ni	ni?	--	--

Squliq has lost the case markers ?i? and ki?, and merged na? and ni?. In other words, it has lost the distinction between common noun and personal noun. Moreover, most of the case markers it still retains are optional. In addition, it has undergone some sound changes, including c > s and k > q. Compare the case markers in the two dialects:

Mayrinax:	ku?	cu?	nku?	cku?	na?	ni?	?i?	ki?
Squliq:	qu?	su?	nqu?	squ?	na?	na?	--	--

Moreover, Mayrinax has a much more elaborate pronominal system than Squliq (see Egerod 1965, 1966). Like most other Formosan languages, there are both long and short pronominal forms in Mayrinax.

	Predicate	Nominative			Genitives	
		Long	Short		Long	Short
			Vi.	Vt.	Vi.	Vt.
1sg	?ikuiŋ	kuiŋ	cu	ci	mu	mi?
2sg	(?i)?isu?	?isu?	su?	si?	su?	si?
3sg	?ihiya?	---	---		nia?	
1exc	?icami	cami	cami		niam	
1inc	?i?ita?	?ita?	ta?		ta?	ti?
2pl	?icimu	cimu	cimu		mamu	
3pl	?inha?	---	---		nha?	

There are two different sets of nominative short forms. Roughly speaking, one is for transitive while the other is for intransitive. Such a distinction is made only for the first and second persons singular.

Similarly, there are also two different sets of genitive short forms, transitive and intransitive. The "intransitive" genitive forms are used to modify a noun, e.g., pila? mu 'my money', while the "transitive" genitive forms are used to indicate a non-Agent-focused verb, e.g., ras-un mi? 'brought by me', p-in-aŋa? ti? 'carried by us (inclusive)'.

Like all the other Atayal dialects such as Squliq, in Mayrinax cami 'we (exc)' is used instead of cu or ci 'I' in such an expression:

A5. ma-tutiŋ cami ki? ba?ay. 'I fight with Ba?ay.'
AF-fight Nom/we Acc name

2.2 Seediq

Seediq has only two case markers, ka 'nominative' and na 'oblique'. Both markers are most often optional. There is no distinction between common and personal nouns. The genitive marker na right after a noun indicates possession or an Agent in a non-Agent-focused sentence.

D1. malu ka rseno. 'Men are good.'
good Nom men
D2. mu-nu-bahaŋ ku wada huqin ka pawan.
AF-Perf-hear Nom/I Asp die Nom name
'I heard that Pawan had died.'
D3. su-sapo na lupi ka laqi na tama.
BF-lay Acc mat Nom child Gen father
'Father laid a mat for the child.'
D4. tama su-sapo na lupi ka laqi na.
father BF-lay Acc mat Nom child his
'Father laid a mat for his child.'

There are four different sets of personal pronouns in Seediq: nominative, genitive, accusative and locative. Only the genitive has both long and short forms, and the nominative has only short forms, whereas the accusative and the locative have only long forms.

Personal Pronouns in Seediq

	Nominatives		Genitives		Accusatives	Locative
	Long	Short	Long	Short	Long	
1sg		ku?	naku?	mu	yaku?	kenan
2sg		su?	nisu?	su?~sa-	?isu?	sunan
3sg		---	neheya?	na?	heya?	
1inc		ta?	nita?	ta?	?ita?	

1exc	nami	nami	nami	yami	mian
2pl	namu	namu	namu~ma-	yamu	munan
3pl	---	ndeheya?	na?	deheya?	

Unlike Atayal, Seediq uses the first and second persons singular in such an expression:

D5a. kuxun su-mu. 'You are my love = I love you (sg).'
love you my
b. sunkuxun ku isu. 'I love you (sg).'
AF-love Nom/I Acc/you

Atayal and Seediq are closely related. Yet they differ in that the former distinguishes between common and personal nouns, whereas the latter makes no distinction. Apparently the distinction has been lost in all Seediq dialects, just as in the case of the Squliq dialects of Atayal.

2.3 Tsou

Tsou has four different sets of case markers:

Nominative: ?e, si, ta, ?o, na, co
Accusative: ta, to, nca
Genitive: no, ci
Locative: ne

For detaild descriptions and discussions of the syntactic and semantic functions of these case markers, see Tung (1964:147), Tsuchida (1976:94) and Zeitoun (1992, 1993). Given below are examples to illustrate the case markers:

T1. man?i ?e i-si eaa to c?oexa ci eosk∂ ta oko.
many Nom PF he PF-catch ne river Gen fish Acc child
ta
no
'The child caught many fish at the river.'
T2. ?o oko mo ticunu to mo yuso ci meoi si eosk∂.
Nom child Aux catch Acc Aux two Gen big Nom fish
'The child caught two big fish.'
T3. smoa-zom∂ ne fueŋu ne tasiona ?e amo.
AF-shot bird Loc mountain Loc morning Nom father
'Father shot birds in the mountain in the morning.'
T4. sia na suu ? 'Who are you ?'
who Nom you
T5. mio coŋo co t?aŋo-?u. 'My leg hurts.'
Aux hurt Nom leg my

No distinction between common noun and personal noun is made in Tsou.

Like most other Formosan languages, Tsou has both long (free) and short (bound) pronominal forms. The long forms can occur freely like an ordinary noun, but they can only be optionally preceded by a nominative marker na, and nothing else. A short form is attached to a preceding auxiliary verb or noun.

T6. os-ko eoobak-a (na) a?o. 'I was hit by you (sg.).'
PF you hit PF Nom I
T7. ta-?u m-imo to chumu. 'I shall drink water.'
Aux I AF-drink Acc water
T8. oh-ta ima-a (na) ?o emi.
Aux he drink PF Nom wine
'The wine was drunk by him before.'
T9. i-si p-toŋs-a ta ino-si si oko.
PF he cause-cry-PF Acc Mom his Nom child
'The child was caused to cry by his mother.'

Personal Pronouns in Tsou

		Free	Bound	
			Verbal	Nominal
1sg		a?o	?u~?o	?u
2sg		suu	su~ko	su
3sg	spec	---	ta	si
	gener	---	si	
1inc		a?to	to	to
1exc		a?mi	mza	mza
2pl		muu	mu	mu
3pl	spec	hin?i	hin?i	hin?i
	gener	hee	he	he

2.4 Kanakanavu

Kanakanavu has the following two (or three) sets of case markers (Tsuchida 1976:36-17, Mei 1982):

Nominative: sua, sa, si
Oblique: sua, sa
Locative: na

The disticntion between nominative and oblique is rather obscure since the same markers, sua and sa, are used for both cases. Moreover, these case markers are optional.

Kn1. kanakanavu sua caau iisua. (Tsuchida 1976:36)
Nom person that
'That person is a Kanakanavu.'
Kn2. ni-m-ia-pacai sua caau sua tutui na tau-canum-a. (Tsuchida
Perf-AF kill Nom person Obl pig Loc water 1976:37)
'The person killed a pig at the place to draw wather.'
Kn3. ni-m-ia-pacai avia tutui. (Mei 1982)
Perf AF kill name pig

'Avia killed a pig.'

There is no distinction for a common noun and a personal name, as illustrated in Kn3 above.

Kanakanavu also has both long (free) and short (bound) pronominal forms.

Personal Pronouns in Kanakanavu

	Bound				Free	
	Nominative	Genitives			Nominative	Oblique
		I	II	III		
1sg	ku,kia	aku	maku	naku	iiku,iikia	?ikua
2sg	kasu	su	musu	nsu	iikasu,iimukasu	kasua
3sg	--	---	iisa	nni	iisa	iisa
1inc	kita	ta	mita	nta	iikita	kitana
1exc	kimi,kia	mia	mia	nmia	iikimi,iikia	kimia
2pl	kamu	mu	mmu	nmu	iikamu,iimukamu	kamua
3pl	--, m-ini	ni,kiai,ini		ini	ŋuani	?inia

Kn4. niani ŋanai su ? 'What is your name ?'
what name your
Kn5. tia ku mi-ia-pacai caau. 'I shall kill a person.'
Fut Nom/I AF kill person
Kn6. ma-?ic∂p∂ kasu ?uucu ? 'Are you afraid of ghosts ?'
AF fear Nom/you ghost
Kn7. c-um-ac∂?∂ra kasu ?ikua. 'You see me.'
AF see Nom/you Obl/me

2.5 Saaroa

There are only two sets of case markers in Saaroa:
Nominative: ka, a (wa, ya)
Oblique: na

All of them are optional (indicated by parentheses) in the sentence:

Sr1a. maci?i (a) tasau. 'The dog died.'
AF-die Nom dog
b. maci?i (ka) tasau. 'The dog died.'
Sr2. um-au-a-u a mamaini na vutukuɬu.
AF R eat Nom child Obl fish
'The child kept eating fish.'
Sr3. um-a-ala cucu?u na vutukuɬu na ɬuuɬuŋ.
AF catch person Obl fish Obl river
'The person caught fish in the river.'
Sr4. t-um-a-tutulu a ina-ku na mamaini na kari.
AF- teach Nom Mom my Obl child Obl language
'My mother taught language to a child.'

Like Tsou and Kanakanavu, Saaroa does not distinguish between a common noun and a personal noun. The same case markers may precede both nouns. For example,

Sr5. ɬi-m-ari-vakəsə ka aŋai na mamaini. (Ting, MS)
Perf AF beat Nom name Obl child
'Aŋai has beaten a child.'

Somewhat like Kanakanavu, the nominative marker ka in Saaroa may precede an Agent in a non-Agent-focused sentence:

Sr6. sa-alu-a ka cucu?u kana?a ka vutukuɬu.
RF catch Obl person that Nom fish
'The fish was caught by that person.'

Similar to Tsou and Kanakanavu, Saaroa has both free and bound pronouns. The general free forms may appear as the topic or object of the sentence, while the two sets of bound forms are suffixed either to the verb as the nominative marker or to the noun as the genitive marker. In addition, the genitive bound forms may combine with na- as free forms.

Sr7. iɬaku k-um-ita vuɬi?i. 'As for me, I saw a snake.'
Top/I AF-see snake
Sr8. ɬi-k-um-ita-aku iɬau. 'I have seen you.'
Perf AF see Nom/I Obl/you
Sr9. kani?i ia isikana-ku. 'This is mine.'
this Top possession Gen/I

Personal Pronouns in Saaroa

	Topic	Nominative	Genitive	Oblique
1sg	iɬaku	-aku	-ku	na iɬaku
2sg	iɬau	-u	-u	na iɬau
3sg	iɬaisa	--	-isa	isana
1inc	iɬata	-ita	-ta	na iɬata
1exc	iɬaɬamu	-amu	-ɬamu	na iɬaɬamu
2pl	iɬamu	-mu	-mu	na iɬamu

2.6 Rukai

The Tanan dialect of Rukai has the following case markers (Li 1973:84-94):

sa	Accusative common noun
ko	Nominative personal name
ki	Accusative personal name

RT1. aw-baay nakoa sa omas ?asilalak ko tina-li.
AF give Acc/me Acc person adopt Nom Mom my
'My mother gave me away to a person as an adopted child.'
RT2. ko maLeŋa, "tobaasa ina kensas sa gooŋ" amia ki doLay.
Nom name cook soup police Acc cow so Acc name

'MaLeŋa said to DoLay, "Cook beef soup for the police !'

Tanan distinguishes between a common noun and a personal noun, as illustrated above. The distinction seems to have been lost in a closely related dialect, Budai, in which both ko 'nominative' and ki 'accusative' occur before common nouns and personal names, as in the examples below:

RB3. ko karaða la moaDiŋ ki daə.
Nom pangolin then AF-enter Acc ground
'The pangolin then entered the ground.'

RB4. la kəla ko soLaw o-pala-palaŋ ki baləŋ.
then come Nom snake AF woo Acc name
'Then the snake came to woo Baləŋ.'
RB5. papacay ko saovalay sa ababay. 'The man killed a woman.'
kill Nom man Acc woman

The difference between ki and sa in Budai is that the former is definite and the latter indefinite.

In the Maga dialect of Rukai, there are the following case markers:

ki Nominative, human noun, common or personal
na Accusative, non-human, common noun
-ana Accusative, personal
ku marker leading a relative clause (indicated by [ ])

RG6. u-stiti ŋkua ki toto. 'Toto beat me.'
AF-beat Acc/me Nom name
RG7. u-stiti vlavlakɨ ki marDaŋɨ. 'The old man beat a child.'
AF-beat child Nom old
RG8. u-kanɨ DaDoŋo na blɨblɨ. 'The monkey ate a banana.'
AF-eat monkey Acc banana
RG9. kamdu maa ki vakau na mu-ini ɨθdɨ na bɨkɨ.
die will Nom name Acc go his feed Acc pig
'Vakau will die if he goes to feed a pig.'
RG10. n-u-be maa pesu Dia vakav-ana ki pipecɨ.
Fut give money Acc name Acc Nom name
'Pipecɨ will give money to Vakau.'
RG11. u-rgu musu ku [aci-Da [ku amua takihoku]] ?
AF-know Nom/you who 3inv went Taipei
'Do you know who went to Taipei ?'
RG12. ika-Da ku [p-ika ki ipulu alapi] ?
where put Nom name stone
'Where did Ipulu put a stone ?'

Instead of making a distinction between a common noun and a personal noun as in Tanan and Tona (see below), Maga distinguishes between human and non-human nouns. This may be considered a unique syntactic development in Maga among all Ruka dialects.

The Tona dialect of Rukai has the following case markers:

ku	Nominative, common
ki	Nominative, personal
na	Accusative, Locative

RN13. ki-á-kan∂ ku b∂l∂b∂l∂ na aDawan∂.
PF eat Nom banana Acc monkey
'The banana was eaten by a monkey.'
RN14. w-a-kan∂ ki ?ipulu na v∂l∂v∂l∂.
AF eat Nom name Acc banana
'Ipulu ate a banana.'
RN15. maga?aucu na valavalak∂ ku maruDaŋ∂.
scold Acc child Nom old
'The old man scolded a child.'
RN16. pa-ua na kay ! 'Put it here !'
put Loc here

All these case markers are mostly optional in the sentence. However, ku may not be deleted when the noun it modifies is topicalized, as in RN16, or when there is agreement between the predicate and the subject, as in RN17:

RN17. ku cu-cumay kiakan∂ na ikulaw.
Nom bear PF-eat Acc leopard
'The bear was eaten by a leopard.'
RN18. ?iakai-ni ku valisan∂ ?
exit its Nom wild pig
'Where is the wild pig ?'

Syntactically Mantauran differs from the other Rukai dialects in the following respects:

1. It has no passive construction indicated by ki- like the other dialects. A passive meaning is indicated by an accusative pronominal marker on the verb (see examples below).
2. It has developed an object-verb agreement (see examples below), not found in any other Formosan language. The agreement occurs only between the verb and a human object or an object possessed by a human.
3. It has few case markers. Hence the subject and object of the sentence are determined by the unmarked word order of VOS. The only case marker ?i 'definite nominative' may have derived from the demonstrative ðona?i 'that'.
4. Almost all of its personal pronouns are bound.

RM19. okan∂ v∂l∂v∂l∂ mavoroko. 'The monkey ate a banana.'
eat banana monkey
RM20. okan-in∂ v∂l∂v∂l∂ mavoroko.
eat Acc/him banana monkey
'The banana was eaten by a monkey.'
RM21. okan-in∂ v∂l∂v∂l∂-ini tamatama.
eat Acc/him banana Gen/his father

'Father's banana was eaten by someone.'
RM22. okanə-ŋ-iaə   vələvələ-li ocao.
      eat Perf Acc/me banana my person
    'My banana has been eaten by a person.'
RM23. ?okoloð-iaə   ?i pələŋə.   'The ghost is afraid of me.'
      fear Acc/me Nom ghost
RM24. ?oponoho ka-li.   'I am not from the village of ?oponoho.'
      place   not I

Except for Mantauran, all Rukai dialects have free personal pronouns, which usually occur in the topic position. They all have bound forms for the nominative, accusative and genitive. See Li (1977:Appendix, 1994), and Zeitoun (1994) for the personal nouns in the five major Rukai dialects.

2.7 Bunun

There is no distinction between common noun and personal noun in Bunun.

According to Ogawa and Asai (1935:588), Bunun had a contrast between the nominative marker as and the oblique marker is (in the Northern and Central dialects) or mas (in the Southern dialect). However, in the Isbukun dialect of Bunun, there is only one case marker mas that may precede an object, as in BS1 below. The grammatical particle tu between two nouns indicates subordinate relationship; cf. BS2a and b:

BS1a. m-aun ?utuŋ mas bunun.   'The monkey ate banana.'
      AF-eat monkey Acc banana
   b. kaun-un mas ?utuŋ-cia? bunbun.
      eat -PF Acc monkey that banana
    'The banana was eaten by that monkey.'
BS2a. mataisah bukun mas cina?.   'Bukun dreamed of Mother.'
      AF-dream name Acc Mom
   b. mataisah bukun tu cina?.
      AF-dream name   Mom
    'Some one dreamed of Bukun's mother'

In most Austronesian languages, case markers precede the noun they modify. Nevertheless, the nominative and accusative markers usually appear as suffixes to nouns in Bunun, as in B3S-4. The case-marking affixes may have derived from demonstratives. This can be considered a unique syntactic feature developed in the Isbukun dialect of Bunun.

BS3. makua? cina?-a?   si?al (mas) ?uvað-cia? ?
      how   Mom Nom/that coax Acc child Acc/that
    'How does that mother coax that child ?'
BS4. manah tama?-an   ?aval-tan.
     shoot Dad Nom/this squirrel Acc/this
    '(This) father shot this flying squirrel here.'

In the Takbanuath (a Central) dialect of Bunun, as reported by Jeng (1977), there are several case markers that precede nouns, including:

a	Nominative (Jeng 1977:185)
ka	Nominative (Jeng 1977:185)
ki	Accusative (Jeng 1977:262)
i	Locative or accusative (Jeng 1977:107)

See Jeng 1977 for examples in sentences.

There are four different sets of pronouns in Bunun: nominative, accusative, genitive and locative. There are both long and short forms in the first three sets, whereas in the fourth set there are only long forms. See Li 1994 for Isbukun examples for all pronominal forms in sentences.

Personal Pronouns in Bunun (Isbukun)

	Nominative		Accusative		Genetive		Locative
	Long	Short	Long	Short	Long	Short	
1sg	saikin	-ik	ðaku?	-ku?	?i-nak	-nik	ðaku-an
2sg	ka-su?	-as	suu?	-su?	?i-su?	-su?	su?u-an
3sg Cl	saian	--	saicin	---			sai-an
Di	saia?		saicia?		?isaicia?	saicia?	
1inc	ka-ta?	-ta?	mita?	-ta?	?i-mita?	-mita?	mita-an
1exc	ka-imin	-im	ðami?		?i-nam	-nam	ðami-an
2pl	ka-mu?	-am	muu?	-mu?	?i-mu?	-mu?	mu?u-an
3pl	naia?	--	naicia?	---	?inaicia?	naicia?	nai-an

As in the other Formosan languages, the pronominal forms vary from dialect to dialect in Bunun. Phonologically, perhaps also syntactically, the northern dialects of Bunun are more conservative than the others. Given below for comparison is the pronominal system in Takituduh, a northern dialect of Bunun.

Personal Pronouns in Bunun (Takituduh)

	Nominative		Accusative		Genitive		Locative
	Long	Short	Long	Short	Long	Short	
1sg	?aðak	-ak~-ku	ðakun		?inak	-nak	ðakuan
2sg	?asu		?asu		?isu?u	-su?u	su?uan
3sg	cia		cia		?icia		
1inc	?ata	-ta	?ita	-ta	?imita	-mita	?ita?an
1exc	?aðam		ðami		?inam	-nam	ðamian
2pl	?amu		mu?un		?imu	-muu	mu?uan
3pl	nai		nai		?inai		

BN5. ma-ludaq ?asu ðakun. 'You(sg) hit me.'
AF hit Nom/you Acc/me
BN6. ma-ludaq cia ?ita. 'He hit us(inc).'
Nom/he Acc/us

BN7. caiv-i ?aðak hutan. 'Give me sweet-potatoes !'
give PF/Imp Nom/I potato
BN8. ?inak tu ?uva?að. '(He) is my child.'
Gen/I child
BN9. muhaan-ak su?uan. 'I came to your place.'
AF-come Nom/I Loc/you

2.8 Paiwan

There is personal and non-personal distinction in Paiwan nouns (Ogawa and Asai 1935:137, Ho 1978).

	Nominative	Genitive	Oblique	Locative
Common:	a	na, nua	ta, tua	i
Personal sg.	ti	ni	tjay	
Personal pl.	ti-a	ni-a	tjay-a	

There are four different sets of personal pronouns: nominative, genitive, accusative and locative, and only the nominative and genitive have both long and short forms (Ogawa and Asai 1935:138, Ho 1978):

	Nominative		Genitive		Accusative	Locative
	Long	Short	Long	Short		
1sg	tiak∂n	-ak∂n	niak∂n	ku-	tjanuak∂n	tjitjanuak∂n
2sg	tisun	-sun	nisun	su-	tjanusun	tjitjanusun
3sg	timadju	---	nimadju	---	tjamadju	tjimadju
1inc	titj∂n	-itj∂n	nitj∂n	tja-	tjanuitj∂n	tjitjanuitj∂n
1exc	tiam∂n	-am∂n	niam∂n	nia-	tjanuam∂n	tjinuam∂n
2pl	timun	-mun	nimun	nu-	tjanumun	tjitjanumun
3pl	tiamadju	---	niamadju	---	tjaiamadju	tjiamadju

2.9 Puyuma

There are two major dialects of Puyuma, Nanwang and the others, including Katipul, Tamalakaw, Rikavong, etc. Nanwang is more conservative in retaining the voiced stops, which have all changed to fricatives in the other dialects. It is assumed that Nanwang may also be more conservative in syntax. In fact, both dialect groups have the same or similar case markers for nouns; see Cauqelin (1991) for Nanwang and Tsuchida (1980) for Tamalakaw.

Puyuma is a VOS type of language. It distinguishes between common noun and personal noun. It has four sets of case: nominative, genitive/agentive, oblique and locative.

		Nominative	Oblique	Genitive/Agentive	Locative
Common	specific	na	kana	kana	
	unspecific	a	Da	Da	i
Personal	singular	i		kan	
	plural	na		kana	

P1. maTaŋis na manudəŋ. 'The baby cried.'
cry Nom baby
P2. sagar ku Da walak. 'I like children.'
like Nom/I Obl child
P3a. muruma? la i ina. 'Mother returned home'
return already sg Mom
b. muruma? la na ina. 'Mother and others returned home.'
returen already pl Mom
P4. tu bəray-ay Da walu kan tina-taw iDina walak.
give RF Obl candy Pers sg Mom his this child
'This child was given some candy by his mother.'
P5. tu kan-aw kana walak iDina bu?il.
eat PF Gen-Com-sp child this taro
'This taro was eaten by a child.'
P6. na mədkan kana radis i: a walak.
Nom-sp eat Obl peanut Nom-nonsp child
'The one who ate peanuts was a child.'
P7. nanu ruma? i puyuma. (Cauqelin 1991)
your house Loc
'Your house is at Puyuma.'

Personal Pronouns in Puyuma

	Nominative		Genitive		Accusative	(Cauqelin 1991) Agenitive
	Long	Short	Long	Short		
1sg	kuyku	-ku	naŋku	-li	kaŋku	-ku
2sg	yuyu	-yu	nanau		kanu	-nu
3	taytaw	---	nantu	-taw	kantaw	-tu
1inc	tayta	-ta	nanata		kanta	-ta
1exc	mimi	-mi	naniam		kaniam	-niam
2pl	muymu	-mu	nanmu		kanmu	-mu

Given below are examples to illustrate some personal pronouns is sentences:

P8. mədkan yu la ? 'Have you(sg) eaten already ?'
AF-eat Nom/you already
P9. məna?u mu kaniam. 'You(pl) saw us(exc).'
see Nom/you(pl) Acc/us(exc)
P10. taytaw məna?u kanta. 'He saw us(inc).'
he see Acc/us(inc)
P11, səLTa?-ay kuyku. 'I was slapped on the face by someone.'
slap RF Nom/I

2.10 Amis

Amis distinguishes between common noun and personal noun. It has four different sets of case markers: nominative, genitive, accusative and locative.

Amis has a variety of dialects. The most conservative dialect is Sakizaya, which retains more archaic phonological and lexical features than the other dialects. Unfortunately I have no data for its grammar. This study is based on the central dialect, which is most widely used among all the Amis.

	Nominative	Genitive	Accusative	Locative
Common:	ko	no	to	i
Personal:	ci	ni	ci...-an	

M1. t-om-aŋic ko wawa i lumaq. 'The child cried at home.'
AF- cry Nom child Loc house
M2. mi-palo ko mama to wawa. 'The father hit a child.'
AF-hit Nom father Acc child
M3. palo?-∂n no mama ko foŋoh no wawa.
hit PF Gen father Nom head Gen child
'Father hit the child's head.'
M4. mi-cahiw ci raraq ci t∂fiq-an. 'Raraq persecuted Tefiq.'
AF-persecute Nom Acc
M5. patay-∂n no ina ko fafoy to cahiw.
kill PF Gen Mom Nom pig Acc hunger
'The pig was starved to death by a mother.'
M6. patay-∂n ni raraq ci t∂fiq. 'Tefiq was killed by Raraq.'
kill PF Gen Nom

Regardless of the variant word order VSO~VOS in the surface structure, the Agent always precedes the Patient.

Personal Pronouns in Amis

	Nominative	Genitive		Accusative
		I	II	
1sg	kako	mako	-ako	takoanan
2sg	kiso	miso	-iso	tisoanan
3sg	ciŋra	nira	--	ciŋra?an(an)
1inc	kita	mita	-ita?	tita?anan
1exc	kami	niam	-ami	tamianan
2pl	kamu	namu	-amu	tamoanan
3pl	caŋra	naŋra	--	caŋra?an(an)

M7. palo?-∂n-ako ko wawa?-ako. 'My child was hit by me.'
hit-PF Gen/I Nom child Gen/I
M8. ci raraw ko mi-palo?-ay, ca?ay-ay kako.
Pers name Nom hit NM not NM Nom/I
'It is Raraq who hit (him), not me.'
M9. ma-tawa ko tamdaw takoanan. 'The person laughed at me.'
laugh Nom person Acc/me

2.11 Pazeh, Kavalan, Thao and Saisiyat

I (Li 1978) described the case-marking systems of the four less known Formosan languages (Pazeh, Kavalan, Thao and Saisiyat) in some details. Readers are referred to the paper for their case markers for nouns and pronouns and their examples in sentences.

Here I shall briefly cite only the case markers on nouns for the convenience of a general comparison.

Pazeh has the following four sets of case markers for noun:

ki	Nominative marker
u	Accusative marker, coordinate marker
ni, nu	Genitive markers
di	Locative marker

Kavalan has the following case markers:

a(wa,ya)	Nominative for a common noun
ti	Nominative for personal
tu	Accusative for general and non-human
ta	Accusative for human
na	Genitive for common noun
ni	Genitive for personal
ta-...an	Locative

Thao has the following case markers:

na	Nominative for a common noun
ti	Nominative for a personal including kinship terms
s(a)	Nominative or accusative for general
tu	Accusative
?i	Locative

Saisiyat has the following case markers:

ka	Accusative
noka	Genitive for common noun
ni	Genitive for personal name
no	Genitive for nonpersonal proper noun, also Benefactive
ray	Locative or directional for common noun
kah	Directional marker for personal name

3. Summary and Discussion

Some Formosan languages distinguish between the common noun and the personal noun like the Philippine languages, whereas the others do not. Such a distinction is made in Atayal (Mayrinax), Rukai (Tanan, Maga, Tona), Paiwan, Puyuma, Amis, Kavalan, Thao and Saisiyat. The distinction is not made or found in Seediq, Tsou, Kanakanavu, Saaroa, Rukai(Budai, Mantauran), Bunun or Pazeh. The distinction seems to have existed at an earlier stage but lost in some modern languages and dialects, including the Squliq dialect of Atayal, Seediq, the Budai and Mantauran dialects of Rukai. However, there is no evidence that such a distinction ever existed in the Proto-Tsouic language. The Tsouic languages differ from most other Formosan languages, the Atayalic and the so-called "Paiwanic", in this respect.

The case markers in most of the languages have relatively simple systems. Only two of them have more elaborate systems, i.e. the Mayrinax dialect of Atayal and Puyuma. Have these two languages developed elaborate systems of case markers on their own, or have the others simplified their systems ? This requiress further study.

All Formosan languages have fairly elaborate pronominal systems, and most have three or more different sets of pronouns: nominative, genitive, accusative and/or locative. The pronominal systems are in general more complicated than those of case markers for nouns in these languages. Moreover, most of the languages have developed the short forms of personal pronouns. Thus they have both long (free) and short (bound) forms for one or more sets. Only a few have not, including Saisiyat and Thao, and these languages are more conservative in this respect. The other extreme in the development of personal pronouns is that a language, such as the Mantauran dialect of Rukai, has only bound forms, and no free forms. Such a language has undergone one of the most drastic syntactic changes. By comparing the different case markers in Formosan languages, we can get a better picture of how they differ from each other in the evolution of their case-marking systems.

List of Abbreviations

Acc	Accusative
AF	Agent-focus
Agt	Agent
Aux	Auxiliary verb [illegible]
Ben	Benefactive
BF	Benefactive-focus
Dat	Dative
exc	exclusive
Gen	Genitive
gener	general
inc	inclusive
Ins	Instrument
inv	invisible
LF	Locative-focus
Loc	Locative
NM	Nominalization
Nom	Nominative
Obl	Oblique
Perf	Perfective
Pers	Personal
PF	Patient-focus
Pl	Plural
R	Reduplication
RF	Referential-focus
Sg	singular
spec	specific
Top	Topic
Vi	intransive
Vt	transitive

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AFTER BEING REFUSED:
RESPONSE TO FACE-THREATENING SPEECH ACTS

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Abstract

This is a sociolinguistic study, researching how Chinese people in Taiwan react or redress in Mandarin Chinese to save face (for 'self' and/or for 'other') after they are refused. The post-refusal reaction includes the reaction after the refuser's rejection to requests, invitations, offers, and suggestions. Twenty-three strategies are concluded in the post-refusal speech acts. The twenty-three first-order strategies are further summarized in five second-order super-strategies or maxims. The highest-order principle in the speech act is politeness and/or face-saving theory.

The strategies of the post-refusal speech acts include 1) silence, 2) changing the topic, 3) counter-rationale, trying to persuade the refuser, for example, promising early retribution, 4) complying with the refuser, 5) external yes, internal no, 6) saying thank you 7) criticism, 8) threat, 9) reprimand, 10) offering self an alternative, 11) modifying one's request, for example, reducing the amount of borrowing, 12) asking the refuser to find an alternative, 13) explanation of the justification of the request, 14) postponement, 15) giving a lesson, 16) repeating the request, 17) comforting the refuser and/or self, 18) showing surprise, 19) asking for explanation, 20) showing disappointment, and/or regret, 21) a composite strategy, 22) topic-closing expressions, and 23) joking.

The methods used in summarizing post-refusal speech acts into twenty-three strategies include the intuition of the researcher as a native Mandarin speaker in Taiwan, participant observations, and role playing by undergraduates to fill in the 12 DCT items devised by Takahashi et al. (1986), which were modified and translated into Mandarin Chinese by the researcher. Takahashi et al. originally devised the 12 DCT items for subjects to fill in words of rejection with the known parts of the requester's request and the requester's post-refusal expressions. My subjects are given Takahashi et al.'s twelve situations and the requester's request. They are asked to make up the conversation in which the interactant refuses and the following post-refusal speech until the dialogue comes to a natural end.

The factors influencing post-refusal speech acts include the property of the request (or rank of imposition in Brown and Levinson's (1987) term), the interactants' relative social status, the familiarity or social distance of the interactants involved, the sex of the interactants, the way one is refused, the age of the interactants and each individual's speech habits. For example, if the refuser is of higher status, the refusee may simply say THANK YOU after being refused. If the refuser is a close friend, the refusee may react by reprimanding, giving a lesson to the refuser, complaining or appealing to feelings, threat, and so on. The post-refusal speech acts are also affected by the way one is refused. For instance, if the refuser refuses by offering an alternative, the refusee may respond with the explanation of the impossibility of the alternative, or saying s/he will try to follow the refuser's suggestion of the alternative.

Besides the revised data from Takahshi et al. to be used for this study, we also devised six role-play situations for students to fill in the words they would say after they are refused. For most situations, there are 100 subjects, 50 males and 50 females, participating in the tasks. There are 596 subjects participating in the study. After collecting the data, three statistical methods--factor analysis, Student's t-test, and the Chi-square test for homogeneity--are used to analyze them.

The factor analysis and Student's t-test are for testing whether males and females belong to the same culture within the macro-Chinese culture. The statistical methods

prove they are from different micro-cultures, which seems to explain why females are different from males in reaction to refusal. The Chi-square test is for testing the homogeneity of two sexes in the strategy use and whether they (both males and females) use the same strategy to refuse the family member, a close friend, and an acquaintance.

1. Introduction

Gass and Houck (1993: 1) point out that 'refusals are a highly complex act primarily because they often involve lengthy negotiations to accommodate the noncompliant nature of the speech act. Because refusals normally function as responses, they preclude extensive planning on the part of the refuser. That is, they are played out events, rather than instances characterized by a brief exchange or single utterance.... A refusal...without some kind of elaboration or follow-up can have severe social consequences.'

Why are refusal-sequences complex? Primarily because they are related to face. 'Face is something that can be lost, maintained, or enhanced, and any threat to face must be continually monitored during an interaction. And, since face is so vulnerable, and since most participants will defend their face if threatened, the assumption is made that it is generally in everyone's best interest to maintain self's and each other's face and to act in such ways that others are made aware that this is one's intention (Fraser, 1990: 229).' What makes acceptance-refusal-sequences more complex is that Chinese people in Taiwan may say 'no' to mean 'yes', or vice versa. Sometimes after the acceptance-refusal negotiations, the inviter or the requester might still be at a loss as to what the invitee or the requestee's real intention is (Lii-Shih, 1994).

In Liao (1994), I talked about refusal phenomena in Mandarin Chinese. In this short article, I will discuss how the requester (s/he is also the refusee) and the requestee (also the refuser) redress or defend their own face in the post-refusal phase. Since refusal events are FTAs (face-threatening acts), after FTAs there should be some redressive speech acts to compensate the face lost for the requester and/or the refuser. In Mandarin Chinese we call it *xia-tai-jie* ('stepping-down the stage').

The purposes of the study are three: to summarize post-refusal speech acts into 23 strategies based on relevant Mandarin Chinese data, to propose the politeness maxims of the post-refusal speech act strategies, and to compare the females and males in the strategy use of post-refusal speech act. Of course, the examples in Mandarin Chinese offer MFL/MSL learners (learners of Mandarin as a Foreign/Second Language) the exact words native speakers use as refusing and post-refusal expressions[1].

2. Literature Review

Liao (1994) indicates there are two kinds of request: one is the request to help, offer, suggest, and invite in favor of the addressee (an FSA request, a face-satisfying act)[2]; the other kind is the request of the addressee's time and money in favor of the requester (an FTA request--the narrow meaning of request). The pre-requisite of the FSA request is that if the requester does not request, the responder does not ask for the requester's help, offering, suggestion, or invitation; and the pre-requisite of the FTA request is that if the requester does not request, the responder would not do it. For addressee-beneficial FSA-requests, the responder, especially in Oriental countries, such as Taiwan and Japan, must learn the art of acceptance by first refusing. After s/he finds that the requester is really sincere, s/he accepts but asks the FSA givers not to spend a lot of time or money on it. For FTA-requests, one also has to learn the art of refusing as well as the art of the post-refusal speech act because face is a universal concept to be maintained by all human beings.

Making a request may be an FTA, rejecting a request is surely an FTA. (Lii-shih, 1986; Brown and Levinson, 1987; Liao, 1994). Making a request, in its narrow meaning, violates H's 'face want' of being unimpeded and rejecting a request violates

H's face want of being accepted. A second difference between the two kinds of FTAs is that to make a request, the requester can prepare how to utter it for a long time, consulting others, writing a draft on what to say to reduce the effect of an FTA. S/he can prepare what and how to respond if being refused or accepted. However, refusal is a response to S's request, the refuser must act in an impromptu way. The impromptu way of refusing is also greatly affected by the personality of the refuser and the way the request is made. The post-refusal speech act may be an FTA or an FSA. If the refusee complied with the refuser immediately, it is an FSA for the refuser. If the refusee offers counter-rationale, asks the refuser to find an alternative, asks for explanation, threatens, etc. then, it is an FTA for the refuser. The post-refusal speech act on the part of the requestee (also the refuser) can seldom be prepared.

In this article, I deal with FSA and FTA request together. In later studies, I will deal with them--offer, suggestion, invitation, request, etc.--individually.

Women's language has been speculated to be different from men's (Jespersen, 1922; Lakoff, 1975). It is generally agreed that boys and girls have been treated and interpreted differently shortly after they were born, for example, infant's cry is interpreted as anger when listeners are told the baby is a boy, and as fear when they are told it is a girl (Condry and Condry, 1976). It is generally agreed that boys and girls grow up mainly in interaction with people of the same sex; therefore, boys and girls gradually develop their own way of speaking. When women speak, they intend to create rapport and when men speak they intend to assert or resist control and the speech strategies may thus vary by sex (Kramarae, 1981). Different micro-cultures of boys and girls result in different speech strategies and purposes. In this study, we will prove that men and women are different in post-refusal speech strategies.

2.1 Language Specific vs Language Universal

Little study has been done concerning the post-refusal speech act, with the exception of indirect data used in refusal studies, such as Takahashi et al. (1986) and Liao (1994), in which DCT items of the request and the post-refusal speech are given to the subjects to fill in the refusal words. One of Takahashi et al.'s findings about the difference between Japanese and American ways of refusal is that the Japanese are more status sensitive than the American--this is a well-known fact about the Western and Eastern societies. The Japanese seems to use expressions of regret more frequently with higher-status interlocutors, but less frequently with lower-status interlocutors. In this post-refusal speech act study, I would like to contend that in Taiwan, people use more of the strategy of 'saying thank you' with the higher-status refuser than with the lower-status refuser. The comparative study of four cultures--American, Taiwanese, Singaporean, and Japanese--in four areas concerning post-refusal speech act is under way by Bresnahan, Liao, Kuo and Takashima.

3. The Study

Based on the researcher's intuition as a native speaker of Mandarin Chinese in Taiwan, participant observations, and role-played conversations written by adult native speakers, twenty-three post-refusal speech act strategies are firstly obtained (Section 3.1)[3].

Then, two quantifiable sub-studies were devised.

Sub-study I is the translation into Mandarin Chinese and modification of Takahashi et al's 12 DCT items--so that only the first utterances of the requester's request, offer, invitation, and suggestion are left--for the native Mandarin speakers in Taiwan to make up the conversation in which the interactant refuses and the following post-refusal conversation until the dialogue comes to a natural end. Takahashi et al.'s original items are for subjects to fill in words of rejection with the known parts of the requester's request and the requester's post-refusal reaction. My subjects were only given Takahashi et al.'s twelve situations and the requester's request without the requester's post-refusal reaction.

To make things easier, unlike Sub-study I, Sub-study II concentrates on FTA requests only. It is divided into three parts. The first part is for subjects to fill in what they say in refusing a request, which will be discussed in the joint publication of Bresnahan, Liao, Kuo, and Takashima. The second part consists of eleven questions for males and females to make judgement about their own features, which form the basis of the argument that males and females come from different micro-cultures within the same Chinese macro-culture (see Section 5). The third part is the questionnaire for filling out post-refusal speech after being refused of six FTA requests, which will be discussed in Section 5.1.

3.1 The twenty-three post-refusal speech act strategies

Before talking about the twenty-three post-refusal speech act strategies, one thing must be made clear. There are many strategies which are similar, for example, Strategy 3 'Counter-rationale', Strategy 11 'Modifying one's request', Strategy 13 'Explanation of the justification of the request', and Strategy 16 'Repeating one's request'. To make the difference between Strategy 3 and Strategy 16, we call it Strategy 16 if the refusee does not present more reasons, but only add the word *zhende* 'really' (For example, if being refused of salary raising, the worker repeats the request by saying, "*Dashi wo zhende xuyao jiaxin* (But I really need add-salary) 'But I really need the raise of the salary.',") to the originally request. If the refusee offers more reasons and refutes the explanation of the refuser, then it is Strategy 3. If the refusee tries to give objective facts to justify the request, it is Strategy 13. If the content of the request is changed, then it is Strategy 11.

The strategy of reprimand and that of giving the refuser a lesson may be ambiguous too. If the high-status refusee gives a lesson to the low-status refuser, the latter may treat it as reprimand, and the high-status treats it a lesson.

1. Silence and/or going away

As a participant observer, I grasped the following request-refusing negotiation in the library.

(At the copyer in the library at 1:45)

Student A_1: Qing wen ni hai yao yin ji ye?
Please ask you still want copy how-many pages?
'How many pages do you still have to copy?'

Student B_1: San-shi dwo ye.
thirty more pages.
'Over thirty pages.'

Student A_2: Rang wo xian yin hao-ma? Wo zhi yao yin san ye.
Let me first copy OK PRT? I only want copy three pages.
'Can you let me copy first, because I have only three pages to copy.'

Student B_2: Wo zai gan shi-jian. Wo liang-dian you shi.
I am hurry time. I two-o'clock have things.
'I am in a hurry; I must do something else at two o'clock.'

Student A_3: Ke-shi wo zhi-you san-ye, er-qie wo yi-jing zhao hao le,
But I only have three pages, besides I already find OK PRT.
'But I only have three pages to copy; besides I have

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found the pages to copy.'
Student B_3: (Keep silent, neglecting A's request, and continue copying)

In the above conversation, A_1 is a pre-request question, in which A tries to justify her request[4]. A_2 is the request followed by B_2, in which B explains why she cannot agree to A's request. Then A_3 is the use of the strategy of 'repeating the request' (Strategy 16 in this study) in another expression. B_3 uses the strategy of 'silence' as post-refusal speech act which confirms her intention as refusal.

After being refused by a high-status individual, if the refuser uses the strategy of topic-closing expression, for example, he says, "*Xiaban hou zai taolun ruhe jiejue, xian hwei ganwei ba*! (Off-duty after gain discuss how solve, first return position PRT!) 'Let's talk about it after duty. Now you go back to your job.'," the refusee will have no choice but keep silent and leave.

It is also possible that after the high-status refuser explains the reason for refusal, then the requestee goes away immediately to avoid more counter-rationale from the low-status.

2. Changing the topic

In one of the examples mentioned above, after refusing the worker's request for salary raising by a postponement strategy and the worker's insistence on knowing the answer right away, the boss confirms his refusal intention by saying, "Let's talk about it after duty. Now you go back to your job," which is a composite strategy of first postponement and then changing the topic.

After being refused by the low-status worker to work overtime with the strategy of explanation that he must take his child to see a doctor after work, the boss changes his topic by saying, "*Bing de yan-bu-yan-zhong*? (Sick PRT serious-not-serious?) 'Is your child seriously sick?'," to show his concern of the worker's family, which also implies that the boss has complied with the refuser--the worker.

It seems that if the refuser uses the strategy of explanation which is conventionally worth congratulating or consoling, the refusee will surely change the topic to congratulate or console the refuser, which also implies that the refusee has complied with the refuser. Another example given by one informant is that on hearing the refuser say that he has to rush back home because his wife has had a baby, the refusee first shows his surprise and then changes the topic: *Zhen buqiao! Gongxi ni dang baba le*. (Really not coincidence! Congratulations you as father PRT.) 'What a coincidence! Congratulations on your being a father.'

3. Counter-rationale, trying to persuade the refuser

In one realistic conversation made up by an informant for the request of a low-status worker for salary raising which was refused by the high-status boss, the boss used the strategy of postponement, "I am very busy now. Let's talk about it later." As the post-refusal reaction, the worker says, "*Wo xianzai jiou yao zhidao* (I now want know) 'I want to know the answer now," which is a counter-rationale. Then the boss insisted on talking about it later by saying, "*Wo shwo deng yi-xia. Wo xianzai yao qu song shu le. Hao hao kan dian* (I say wait a moment. I now want to send books. Good take-care-of store) 'I said, "Let's talk about it later," I must send the books out. You, take good care of the store.'."

When refused by the status-equal to lend classnotes because the refuser also has to prepare for the test, the refusee often uses the strategy to persuade the refuser, "*Xianzai xian jie wo yixia ma! Yingyin hwei-lai jiou hwan ni* (Now first lend me one-minute PRT! Copy come back then return you.) 'Lend me for just one minute. I will return you after copying it.'." The copying machine is so popular that the refusee often utters so as counter-rationale for similar cases.

4. Complying with the refuser

After being refused by the high-status boss against salary-raising by a strategy of offering an alternative of a good year-end bonus, the worker says, "*Xiwan niandi neng gankwai dao* (Hope year-end can quickly come) 'I hope it will soon be the end of the year.'," which is the compliance with the refuser.

When the high-status boss wanted to invite the top-managers and their wives, most informants have managers tell the boss the specific reasons for being unable to accept the acceptance. Owing to the adequacy of reasons, most informants make the boss comply with the refuser (refer to Table 2). If the reasons given are vague, most informants make the boss ask for explanation (Strategy 19).

5. External yes, internal no (Unwilling compliance)

One informant, in giving the conversation for the request of salary raising, made the worker say, "*Hao ba! Na ye zhiyou zheyang* (OK PRT. Then too only thus.) 'OK, it's the only way.'," in response to the high-status boss's postponement strategy, "....When the profit of the company has returned to its original rate, I will make adjustment on your salary." Then the informant put in the parentheses that the worker does not think the boss will be willing to raise his salary, which shows that the compliance with the refuser is only on the face value of the words. Strategy 4 and Strategy 5 are different in the speaker's mind only; they are the same on the surface value of the speech.

6. Saying 'thank you'

In response to the explanation strategy of the boss for the impossibility of salary raising for the time being and his promise of future conformity, one informant made the worker say, "*Xiexie ni, laoban. Wo zhidao ni juedwei buhwei kweidai wo* (Thank you, boss. I know you absolutely not maltreat me.) 'Thank you, boss. I know you will not maltreat me.'," the THANK YOU of which means 'complying with the refuser'[5].

After being refused by the status-equal classmate to lend his classnotes by giving the requester a lesson, "I know you are always busy. I have helped you many times. However, this time, I think that you cannot enjoy the crop which you have not planted, *Ni buke laoshi zwo-xiang-qi-cheng* (You cannot always sit enjoy its accomplishment)," the refusee used the composite strategy of first showing regret, then saying 'I'll be grateful to you' and then repeating the request: "*Wo xiaci buhwei le. Wo yihou hwei hao hao xie ni de. Keshi mingtian jiouyao kaoshi le ye!* (I next time not-can PRT. I later will good good thank you PRT. But tomorrow will-be test PRT PRT.) 'I won't (do the same thing) next time. I will be grateful to you. But it will be test tomorrow. Please.'"

When the host refuses the cleaning lady's offer of compensating for the broken vase, by the strategy of a philosophical statement of *swei swei ping-an* (smash smash safe) 'May you have a safe and happy year' and then say specifically that it is not necessary to reimburse, the cleaning lady may say, "*Xie-xie ni, lao-ban* (Thank you, boss) 'Thank you, sir.'," and followed by a promise of working harder and more carefully in the future.

7. Criticism

This rarely happens; only three out of the total of 576 request-refusal-postrefusal sequences used the strategy in Sub-study I, the post-refusal utterances to the twelve situations. However, as a participant observer, I obtained the post-refusal speech act of an ill-mannered saleslady who used the strategy of criticism after she failed in several attempts to sell clothing to the same lady, when the customer is about to leave, by saying, "*(Nide) shencai name cha, hai name tiao* ((Your) figure so bad, still so selective) 'Even you, whose figure is so bad, are so stringent in selection.'," which is very a rude manners toward and will intimidate customers.

8. Threat

In Takahashi et al.'s article, after being refused by the high-status boss against the raise of salary, the low-status worker is made to use the strategy of threat, *Then I guess I'll have to look for another job*. For the same situation, one informant made the worker end the conversation by saying, "*Hao ba! Jiran zheyang, jiou swan le. Yihou* *ni jiou zhidao you sheme hougwo* (OK PRT! Since so, then over PRT. Later you then know have what consequence) 'Since it is so, then I won't talk about it any longer. You will know what the consequence is later.'," which is a threat without being uttered specifically. The former part of this post-refusal speech act is a topic-closing expression, and the latter a threat. Therefore, strictly speaking, it is a composite strategy (Strategy 21).

9. Reprimand

When being refused by a low-status worker to work overtime for 1 or 2 hours, the boss used the strategy by commenting, "*Ni zongshi dwei jiaban you ruci dwo de buyan yu qiaohe.* (You always to overtime have so many POSS reluctance and coincidence) 'You always have other things to do and are always reluctant to work overtime.'"

For the same situation, when the low-status worker explained that he has other things to do so that he cannot work overtime, another of our informants made the boss use the strategy of reprimand by saying, "*Sheme shi? Twei diao ta.* (What thing? Cancel it) 'What thing is so important? Cancel it." In the boss's idea workers must put the company jobs as the first priority; he cannot tolerate this kind of excuse for not being able to work overtime.

10. Offering self an alternative

After being refused by a high-status boss with the strategy of explanation of the present low profit of the company, one informant has the worker give himself an alternative, "*Jiran ruci, wo zhihao lingwai xiang banfa le* (Since so, I only another think method PRT) 'Since things are like this, I can only find some other methods (to earn more money).'," the alternative of which is very vague.

11. Modifying one's request

When being refused by a low-status worker to work overtime for 1 or 2 hours (when a boss says 1 or 2 hours, most people in Taiwan think it should be almost 2 hours or more than 2 hours), one boss modifies his request by saying, "*Buran jia yi xiaoshi jiou hao.* (If not, add one-hour then OK) 'How about working overtime for only 1 hour?'"

After a refusal to attend a party at a status-equal's house by the excuse that the refuser will meet a friend that evening, the host may modify his invitation, "*Yao nide peng-you yiqi lai ma*! (Invite your friend together come PRT) 'How about inviting your friends to come, too?'"

12. Asking the refuser to find an alternative

When the boss gives the low-status worker the suggestion of writing reminders on a small piece of paper and is refused by the latter by the strategy of explanation that the worker tried it without success, the boss uses the strategy by saying, "*Name xiwang ni nenggou xunzhao yige shihe ziji de fangfa* (Then hope you can find an appropriate self POSS method) 'Then I hope you can find a method suitable for yourself.'," in which the refusee asks the refuser to find an alternative for the refuser himself, not for the refused, because suggestion is supposed to be beneficial to the addressee.

Another example, an FTA request--beneficial to the requester, is shown as follows, which is a realistic conversation I got from participant observation. Similar kinds of conversation can often be heard, but are not made up by the native language informants for the 12 DCT items mentioned as Sub-study I of this study.

Teacher: Yifan, ni ba zhexie ziliao tongji chulai.
Yifan, you BA these data calculate out-come.
'Yifan, I want you to use your statistics knowledge to make the data (the teacher's data) meaningful.'
Student: Laoshi, wo zheng mang zhe xie lunwen, mingnian zai zwo, hao ma?
Teacher, I now busy CONT-PRT write dissertation, next year again do, OK Q-PRT?
'Ma'am, I am busy with my dissertation. Can I do it for you next

year?'
Teacher: Na ni tweijian yige lai bang wo zwo.
Then you recommend one come help me do.
'Then, you recommend one person to help me with the statistics.'

In this conversation, the refusee (the teacher) asks the refuser to find an alternative for her.

13. Explanation of the justification of the request/suggestion

After being refused by a high-status boss with the strategy of explanation of the poor profit for the whole company plus the strategy of postponement, a worker may respond by saying, "*Wo yi-jia dwo kao zhe-fen xin-shwei gwo hwo, ni jiou gei wo jia xin ba* (My whole-family all depend-on this salary to live, you therefore give me more salary PRT) 'All my family depend on the salary; please give me raise of salary.'," which is an explanation of the justification of the request without refuting the boss' reasoning.

After being refused by a status-equal classmate with the strategy of explanation that his classnotes have just been borrowed if the requester came earlier, he would be able to borrow it, the refusee used this strategy by saying, "*Name nawei tongxue heshi hwei han ni? Wo jixu yong ta lai jiou ming.* (Then that classmate when will return you? I urgently-need use it come save life) 'When will the borrower return you the classnotes? I desperately need it to save me.'" The latter part of the refusee speech is the explanation of the justification of the request.

14. Postponement

After being refused by the boss, the boss with the same composite strategy of explanation (of the poor profit for the company) plus postponement (promise of salary-raising in the future) as in a previous paragraph, a worker may also explain the necessity of the immediate raise of salary plus asking the boss to re-consider about it and to postpone giving a definite reply, "*Keshi lao-ban, wo zhende xuyao dwo yi-dian de xin-shwei, jiali feichang xuyao, ke fo qing lao-ban zai kaolu yifan?* (But Boss, I really need more a-little POSS salary, home very need, whether or not please Boss again consider?) 'But Sir, I really need a little more salary because of the family condition. May I ask you to re-consider it?'."

Besides asking for the postponement in answer as shown in the last paragraph, here is another example: After being refused by a status equal to lend his classnotes by a strategy of a lie, saying, "*Keshi wode biji hai mei zhengli hao* (But my classnotes yet not organized well) 'But I have not made the classnotes well organized.'," the refusee used the strategy of postponement, asking the refuser to lend it to him when it is well written."

15. Giving a lesson

After being refused to take his advice of keeping reminders on a small piece of paper by the low-status worker with the strategy of explanation, "*Xie zhitiao de fangshi shi hen buzwo. Danshi wo lian xiao zhitiao dwo hwei lwan diou, soyi you xie gen mei-xie yiyang.* (Writing paper-slip POSS method is very not-bad. But I even small paper-slip all can disorder drop, therefore have write with not-write the-same.) 'It is a good idea. But I even cannot find the reminding slip. Therefore, writing or not writing are the same.'," the boss gives the low-status refuser a lesson, "*Na ni shizai shi tai lan-san le. Yiao hao hao gaijin nide gexing.* (Then you really is too lazy PRT. Should good good improve your personality.) 'You are really very lazy. I hope that you can change the bad habit.'"

When the househost refuses the offer of the cleaning lady to compensate for the broken vase, the cleaning lady may show her gratitude to the broad-mindness of the host and then give herself a lesson by saying, "*Wo yi-hou hwei xiao-xin gong-zwo.* (I later will carefully work) 'I will work more carefully.'"

16. Repeating the request

After the high-status boss refuses to raise the salary by the strategy of postponement, the worker may repeat the request by saying, "*Dashi wo zhende xuyao jiaxin* (But I really need add-salary) 'But I really need the raise of the salary.'," which is the repetition of the request without giving more reasons. Repetition of a request stands for emphasis of the original message, not a null.

17. Comforting the refuser and/or self

When the refuser refused to lend a motorcycle for the refusee to go out on a holiday, the refusee may use the strategy to comfort the refuser, "*Mei gwanxi! Wo ling xiang banfa* (Not matter! I another think method.) 'It does not matter! I will think of an alternative.'," which is to ease the uneasiness of the refuser because doing the FTA of rejecting may not only cause uncomfortable feelings in the refusee, but also cause the same feelings in the refuser, too.

18. Showing surprise

After being refused by a status-equal classmate by the explanation that she fell asleep in the class so that only the beginning of the professor's lecture is on the classnotes and she herself was nervous about the test at the moment, "I am sorry I don't have classnotes to lend you. I myself is thinking of borrowing them," the refusee shows great surprise, "*Zeme keneng? Biji kongzhu juran yehwei zheyang*! (How possible? Classnote princess even also-can so) 'How is it possible. You are called Princess Classnotes. Even you did not keep them!'"

If a person (S) often does favor to another (A), S will feel surprised, if not show it, if A refuses him/her when being request to do S a favor of service. Then S will feel that s/he has befriended a wrong person.

19. Asking for explanation

After being refused by the high-status boss (to raise the salary) by the strategy of explanation that the worker has not reached the standard of salary raise, the worker used the strategy of 'asking for explanation' by saying, "*Na wo yao zeme zwo, cai keyi fuhe ni jiaxin de biaozhwun ne* (Then, I must how do, then may conform you add-salary POSS standard Q-PRT) 'Then what is your standard of salary raising?'."

For the same situation of asking for salary raise, an informant made the worker use the strategy of asking for explanation to be more specific, "*Na shi sheme shihou ne? Xia-ge-yue shi ma?* (Then is what time Q-PRT? Next-one-month, is Q-PRT?) 'When will it be, next month?'," after the boss uses the stategy of postponement by saying, "Yes, I know that you have worked very hard. There will be some reward for the hard-working people."

In any situation of request, invitation, offer, suggestion, if the refuser does not offer convincing reasons, foe example, a vague excuse or a direct NO without any reason, it is possible for the refusee to ask for explanation.

20. Showing disappointment and/or regret, or complaining

After being refused by the boss by using the strategy of explaining that there is the global depression and his salary is high already, the worker complains, "*Meici ni dwo zheyang jiang* (Every-time you all so say) 'Your excuse is always the same.'," to show his disappointment.

After being refused by the status equal classmate by giving him a lesson, "You always act in this way. It seems a little unfair that you borrow other people's classnotes, which is the result of hard work, in the name of a test. While other people are working hard, you cut class and have a good time," a classmate may use a composite strategy of showing regret and then repeat the request: "*Hao la! Wo zhidao wo zwo le. Ni jiou zai jie wo yici ma! Bai two la* (OK PRT! I know I wrong PRT. You then again lend me one-time PRT! Please PRT.) 'I am sorry. I know I am wrong. But please lend it to me once again.'."

21. A composite strategy

It goes without saying that many refusees used the composite strategy as the post-refusal speech act.

After the boss was refused by the low-status manager to attend the party at the boss's house by the strategy of explanation that that day happens to be his daughter's twentieth birthday, the whole family have planned for the birthday, so that he is sorry to be unable to attend the boss's party, one informant made the boss utter, "*Zhende!? Natian wo hwei zhunbei yige sheng-ri liwu gei ni nur, zhwu ta sheng-ri kwaile* (Really?! That day I will prepare a birthday present give your daughter, wish her birthday happy.) 'Really!? I will prepare a birthday present for her and wish her a happy birthday.'," in which the boss first shows his surprise and then changes the topic, and of course complies with the refuser. This is quite typical of a composite strategy.

22. Topic-closing expressions

After the high-status boss refuses to raise the salary by explaining the bad economic situation of the company, the worker may say, "*Jiran ruci, name yihou zai tan hao le* (Since so, then later again talk OK PRT) 'Since the situation is so, let's talk about it later.'," which is a postponement strategy and also a topic-closing expression.

After being refused by the high-status customer to eat at a restaurant and sign the contract by the explanation that the company has decided to buy the goods from another supplying company, the salesman used the strategy of topic-closing expressions: *Hao, na bu da-rao le.* (OK, then not bother PRT) 'OK, then I won't bother you now.'

23. Joking

In response to a status-equal refuser against the offer of one more cake, one informant had the refusee use the strategy of joke. The exact content of the conversation made up is as follows.

Friend A: Zai lai yi-kwai dan-gao ba!
Again come one-piece cake PRT!
'How about one more cake?'
Friend B: Ni xiang rang wo cheng si ma? Bu yong le. Xie-xie.
You want make me full dead Q-PRT? Not want PRT. Thank you.
'Do you want to make me full to death? No, I don't want one more. Thank you.'
Friend A: She-me ma! Wo shi xiang fei si ni.
What PRT? I am think fat death you.
'What excuse it is! My intention is to make you fat to death.'

3.2 Sub-study I

Takahashi et al. (1986) give 12 DCT items, which are categorized into four categories--requests, invitations, offers, and suggestions--to informants of 80 students, who are American native English speakers, Japanese native speakers, Japanese speaking English as a second language and Japanese speaking English as a foreign language. Each category has three situations: a refusal to a higher status person, one to a lower status person, and one to a status equal. The DCT items are given in the form of request, then a blank for the informants to fill in--which must be refusal to the request, and then the given requester's response. The 12 DCTs will be reviewed by the category here.

Request:
To high-status refuser: Then I guess I'll have to look for another job.
To low-status refuser: That's too bad. I was hoping you could stay.
To status-equal refuser: OK, then I guess I'll have to ask somebody else.

In response to a high-status refuser against request of salary raise, the worker says, "Then I guess I'll have to look for another job," which is a threat strategy. In response to a low-status refuser against request of overtime jobs, the boss says, "That's too bad. I was hoping you could stay," which is the strategy of expressing disappointment and regret. In response to a status-equal refuser against request of borrowing lecture notes, the classmate says, "OK, then I guess I'll have to ask somebody else," which is the strategy of offering self an alternative.

Invitation:
To high-status refuser: Perhaps another time.
To low-status refuser: That's too bad. I was hoping everyone would be there.
To status equal: OK, maybe another time.

In response to a high-status refuser against invitation to an expensive restaurant and sign the contract, the salesman says, "Perhaps another time," which is a strategy of postponement. In response to a low-status refuser against invitation, the boss says, "That's too bad. I was hoping everyone would be there," which was the strategy of expressing regret. In response to a status-equal refuser against refusal, the friend says, "OK, maybe another time," which is also a strategy of postponement.

Suggestion:
To high-status refuser: OK, it was only a suggestion.
To low-status refuser: Well, it's an idea anyway.
To status-equal refuser: You should try it anyway.

In response to a high-status refuser against suggestion, the student says, "OK, it was only a suggestion," which is a topic ending utterance. In response to a low-status refuser against suggestion, the boss says, "Well, it's an idea anyway," which is also a topic-closing utterance to end the conversation. In response to a status-equal refuser against suggestion, the friend says, "You should try it anyway," which is the repetition of the request for suggestion. In our modified DCT, or better call it realistic conversation writing, only one informant has the boss say the Chinese equilavent of the English, 'Well, it was only a suggestion,' which shows that Chinese people in Taiwan do not use the topic-ending utterance so soon.

Offer:
To high-status refuser: Oh, I'd feel better if I paid for it.
To low-status refuser: Well, maybe you should give it some more thought before turning it down.
To status-equal refuser: Come on, just a little piece.

In response to a high-status refuser against offer, the cleaning lady says, "No, I'd feel better if I paid for it," which is the repetition of the request for offer and also a strategy of counter-rationale, trying to persuade the refuser. In response to a low-status refuser against offer, the boss says, "Well, maybe you should give it some more thought before turning it down," which is a strategy of postponement, asking for postponement in reply. In response to a status-equal refuser against an offer, the friend says, "Come on, just a little piece," which is the repetion of the offer and modification of the request.

For the above twelve post-refusal speech acts, we should say, they are Takahashi and Beebe's preferences and they reflect a few of many possibilities of post-refusal speech acts. The strategies the two researchers used are nine for the twelve situations:

1. Threat
2. Offering self an alternative
3. Expressing disappointment and/or regret
4. Postponement
5. Topic-closing expression
6. Repetition of the request

7. Counter-rationale
8. Asking for postponement in response
9. Modification of the request

Compared with the number of strategies which we summarized in the study, their strategies are few. It is easy to understand because theirs stand for the wisdom of (maybe) only two researchers. In addition, though they may think of many strategies for post-refusal speech act, it is their task which forces them to simplify the post-refusal speech and only ONE hint can be given for the subjects to fill in refusal expressions. Our study focus on the subject's strategy of post-refusal speech act, which are based on the data from 48 informants, who were given the tasks in November, 1993.

Table 1: Strategies used by the refused
in response to the refuser of different social statuses against request

Strategies	To High-status refuser	To Status-equal refuser	To Low-status refuser
1. Silence	2	1	9
2.Changing the topic	0	0	2
3. Counter-rationale	16	24	20
4. Complying with the refuser	7	1	10
5. External yes, internal no	1	0	0
6. Saying THANK YOU	1	0	0
7. Criticism	0	0	0
8. Threat	2	0	0
9. Reprimand	0	0	2
10. Offering self an alternative	2	4	0
11. Modifying one's request	0	0	1
12. Asking the refuser to find an alternative	0	0	0
13. Explanation of the justification of the request	5	3	1
14. Postponement	1	4	0
15. Giving a lesson	0	0	0
16. Repeating the request	3	1	0
17. Comforting the refuser and/or self	0	0	0
18. Showing surprise	0	1	1
19. Asking for explanation	4	1	1
20. Showing disappointment and/or regret, or complaining	1	1	0
21. A Composite strategy	2	5	1
22. Topic-closing expression	1	2	0
23. Joke	0	0	0

The following are the summaries we get from valid realistic conversations made up by 48 adult native speakers of Mandarin in Taiwan. Each of them were asked to make up 12 conversations based on their experience, observations, and intuition. From Tables 1 through 4, if a silence strategy is used as a post-refusal speech act, it means that the negotiation of the episode of request-refusal only consists of a 'dialogue turn'--the speaker speaks (to request, suggest, invite, and offer), and then the refuser refuses, then the conversation is over, which happens rarely--the data also support the observation. We find that most realistic conversations consists of two 'dialogue turns' or more than two. If it is more than two 'dialogue turns', only the requester's first post-refusal speech act, that is only the first speaker's speech of the second turn is discussed and calculated in Table 1 through Table 4.

For the first kind of request--the requester is of a low status, the post-refusal speech act strategies of the requester are of 14 among the 23 (refer to Table 1). For the request made to a status-equal classmate, the post-refusal speech act strategies of the requester are 12 of the 23 (Table 1). As for the request made to a low-status worker, the post-refusal speech act strategies of the boss include 9 of the 23 strategies.

In response to a high-status refuser for an invitation to an expensive restaurant and sign the purchase contract, the low-status refusee used 9 strategies out of the 23 (refer to Table 2). In response to a status-equal refuser for an inviation to his house party, 10 strategies out of the 23 are used (also refer to Table 2). In response to a low-status refuser for an invitation to the boss's house party, 7 strategies out of 23 are used (also refer to Table 2).

In response to a high-status refuser (the teacher) for a suggestion of more conversations and less grammar in a foreign language course, most teachers use the strategy of giving a lesson to emphasize the importance of grammar to refuse to accept the student's suggestion. The students' post-refusal speech act strategies are 9 strategies out of the 23 (see Table 3). In response to an equal-status refuser for trying the new diet suggested, the refusee used 12 strategies out of the 23 mentioned in this study. In response to a low-status refuser against a suggestion of writing reminders on a slip, the bosses used 12 strategies out of the 23 (see Table 3).

In response to a high-status refuser against the cleaning lady's offer of compensating him for the broken vase, the cleaning lady reacts in 10 strategies of the 23. In response to a status-equal refuser against the offer of one more cake, the refusee reacts in 8 strategies out of the 23. In response to the low-status refuser, the boss reacts in 10 strategies of the 23 mentioned in the study (refer to Table 4).

Table 2: Strategies used by the refused
in response to the refuser of different social statuses against invitation

Strategies	To High-status refuser	To Status-equal refuser	To Low-status refuser
1. Silence	0	2	0
2.Changing the topic	0	1	0
3. Counter-rationale	9	14	15
4. Complying with the refuser	7	8	18
5. External yes, internal no	0	0	0
6. Saying THANK YOU	0	0	0
7. Criticism	0	0	0
8. Threat	0	0	2
9. Reprimand	0	0	0
10. Offering self an alternative	0	0	0
11. Modifying one's request	2	1	1
12. Asking the refuser to find an alternative	0	0	0

Table 2: Strategies used by the refused
in response to the refuser of different social statuses against invitation (Continued)

13. Explanation of the justification of the request	2	0	0
14. Postponement	14	5	4
15. Giving a lesson	0	0	0
16. Repeating the request	0	0	0
17. Comforting the refuser and/or self	0	0	0
18. Showing surprise	3	1	0
19. Asking for explanation	5	9	4
20. Showing disappointment and/or regret, or complaining	0	3	0
21. A Composite strategy	4	2	4
22. Topic-closing expression	1	0	0
23. Joke	0	0	0

Table 3: Strategies used by the refused
in response to the refuser of different social statuses against suggestion

Strategies	To High-status refuser	To Status-equal refuser	To Low-status refuser
1. Silence	9	5	6
2.Changing the topic	0	0	0
3. Counter-rationale	23	15	10
4. Complying with the refuser	4	4	1
5. External yes, internal no	0	0	0
6. Saying THANK YOU	3	0	0
7. Criticism	0	3	0
8. Threat	0	0	0
9. Reprimand	0	0	2
10. Offering self an alternative	0	0	0
11. Modifying one's request	0	0	0
12. Asking the refuser to find an alternative	0	0	0
13. Explanation of the justification of the request	0	4	2
14. Postponement	0	0	0
15. Giving a lesson	0	2	2
16. Repeating the request	3	5	3
17. Comforting the refuser and/or self	0	0	1
18. Showing surprise	0	1	0
19. Asking for explanation	1	2	8
20. Showing disappointment and/or regret, or complaining	0	2	0
21. A Composite strategy	4	3	7
22. Topic-closing expression	1	2	5
23. Joke	0	0	0

Table 4: Strategies used by the refused
in response to the refuser of different social statuses against offer

Strategies	To High-status refuser	To Status-equal refuser	To Low-status refuser
1. Silence	3	5	4
2.Changing the topic	0	0	0
3. Counter-rationale	10	20	18
4. Complying with the refuser	1	8	3
5. External yes, internal no	0	0	0
6. Saying THANK YOU	7	0	0
7. Criticism	0	0	0
8. Threat	0	0	1
9. Reprimand	0	0	0
10. Offering self an alternative	0	0	1
11. Modifying one's request	1	2	0
12. Asking the refuser to find an alternative	0	0	0
13. Explanation of the justification of the request	3	0	0
14. Postponement	0	0	7
15. Giving a lesson	1	0	0
16. Repeating the request	10	8	1
17. Comforting the refuser and/or self	0	0	0
18. Showing surprise	0	2	0
19. Asking for explanation	0	0	3
20. Showing disappointment and/or regret, or complaining	5	0	0
21. A Composite strategy	8	2	6
22. Topic-closing expression	0	0	1
23 Joke	0	1	0

4. Maxims of post-refusal speech act

The twenty-three post-refusal speech strategies can be summarized into 4 maxims--maxims of consistency, offense, agreement, and economy. The maxims of economy is not in complementary distribution with the other three; instead, it may overlap with other maxims. The maxim of address, which I contend in Liao (1994) to be a maxim of politeness in refusal, is also appropriate here. It is the Chinese custom to use the address form, to replace the second person pronouns, repeatedly when speaking to a high-status person.

The strategies of 'complying with the refuser', and 'saying thank you' can be categorized into the maxim of agreement.

The strategy of 'criticism', 'threat', 'reprimand', 'giving a lesson', 'showing disappointment', and 'showing surprise' can be categorized into the maxim of offense. When a person used the offense maxim in post-refusal speech, it seems that s/he has the equal-treatment idea: since the refuser does not care about doing FTAs, then I will treat you as I am treated. When their face is threatened by being refused, they defend their face by attacking the other's face, too.

The strategy of 'counter-rationale', 'modifying one's request', 'asking the refuser to find an alternative', 'explanation of the justification of the request', 'postponement', 'repeating the request', 'asking for explanation', 'showing regret', and a composite strategy can be classified into the maxim of consistency.

The maxim of economy may include the strategies of 'silence', 'changing the topic', 'external yes, internal no', 'saying thank you', 'offering self an alternative', 'topic-closing statement', and 'comforting the refuser and/or self'.

'Silence' is the most economic way in the maxim of economy. However, it is not widely used because 'a refusal without some kind of elaboration or follow-up can have severe social consequences (Gass and Houck, 1993: 1).' Chinese people use the strategy of 'silence' mostly together with being or pretending to be absent-minded or beginning to be busy with other tasks.

5. Sub-study II

As mentioned in Part 3, The Study, 596 subjects--298 males and the same number of females--were asked in December 1993 to judge their own features in 11 statements (labeled X11 to X21). They were asked to circle in a seven-point scale from 'strongly disagree' (labeled '1') to 'strongly agree' (labeled '7') for the eleven statements. After doing factor analysis on SAS, we find that three factors can be concluded to include the 11 statements. Factor I is the factor mainly comprising X14, X16, X15, and X17; therefore it is labeled Group-relationship factor. Factor II is the factor mainly comprising X20, X19, X18, and X21, labeled Outstanding factor. And Factor III is the factor mainly comprising X12, X13, and X11, labeled Loyalty factor.

Factor I (Group-relationship factor):
X14: I am open about my disagreement with my group. (Mean: 5.42)
X16: My relationship with others is more important than my own accomplishments. (Mean: 5.31)
X15: I respect people who are modest about themselves. (Mean: 5.39)
X17: My happiness depends on the happiness of those around me.(Mean: 5.03)

Factor II (Outstanding factor):
X20: Speaking up in a group is not a problem for me.(Mean: 4.2)
X19: I enjoy being unique and different from others.(Mean: 4.38)
X18: I am comfortable with being singled out for praise or rewards. (Mean: 4.96)
X21: I find it hard to do anything that my parents would disapprove of. (Mean: 4.86)

Factor III (Loyalty factor):
X12: I won't support my group if they are wrong. (Mean: 5.07)
X13: I will stay with a group that needs me even if I am not happy with it. (Mean: 4.80)
X11: I would be likely to sacrifice my self interest for the good of the group.(Mean: 4.98)

After concluding the eleven statements into three factors, the three factor scores for each subject were then obtained, which are standardized (that is, the mean is 0 and the standard deviation is 1). Then I did Student t-test to compare the difference between two sexes. Table 5 shows that males and females are not different in the Group-relationship factor and the Loyalty factor, while in the Outstanding factor, they are significantly different from each other. In other words, the low mean for females in the Outstanding factor indicates females are significantly reluctant to be unique, outspoken, and disapproving. It reflects the invisibility of women in language and behavior. Because of the female and male difference in their characteristics, males and females naturally have different strategies in post-refusal speech act.

Table 5: Males and females' standardized means
(and standard deviation) in three factors

	Group-relationship factor	Outstanding factor	Loyalty factor
Males	-0.0628 (1.000)	0.1096 (0.992)	0.0135 (1.073)
Females	0.0628 (0.998)	-0.1096 (0.997)	-0.0135 (0.923
t-test value (p-value)	1.54 (0.125)	2.69 (0.007)	0.34 (0.74)

According to Liu (1991: 229-243), prior to the 1960s women tended to conform to the group more than men did. However, the finding in this section seem to say that the women liberation movement since 1960s has not changed the phenomenon much. We agree to Liu's contention: when the group is important to a person, when a person has no sense of security, and/or when a person has no self-confidence, s/he tends to conform to the group s/he is in so that s/he can be accepted. On the other hand, when a person thinks that his position in the group is unquestionable, and/or when he is generally accepted in the group, the chance for him to express different opinions will be great.

The fact that men and women use different speech strategies may originate from child-rearing practices. Boys and girls are treated and expected differently since born. Chaiaka (1989: 3) also indicates that by studying sociolinguistics one can find how social situations determine what kinds of speech are used and how speech develops to meet social needs.

These 596 males and females are also asked to write what they would say after they are refused for the following six situations. Each of the 298 men and the 298 women was asked to fill in the post-refusal speech for only one FTA request.

1. You don't have a car so you ask a friend if you can borrow his car so that you can take your visiting parents out. The friend refuses saying he doesn't lend his car to anyone. What, if anything, would you say after your request had been refused? Write down exactly what you would say. Use the exact words you would speak.
2. You need NT$15,000. You ask your older sister if she would be willing to lend you the money which you promise to repay in 3 months. She answers that she only has NT$30,000 in her bank account which she needs for next semester's tuition. What, if anything, would you say after your request had been refused? Write down exactly what you would say. Use the exact words you would speak.
3. You are the president of the Alumni Association in charge of a reception for college alumni. At the last minute, key people on your committee back out. You ask a friend who owes you several favors to help. S/he refuses. What, if anything, would you say after your request had been refused? Write down exactly what you would say. Use the exact words you would speak.
4. You have just asked a very good friend for help in moving. It will take all day Saturday. Your friend refuses saying that s/he has an important exam coming up. What, if anything, would you say after your request had been refused? Write down exactly what you would say. Use the exact words you would speak.
5. You are buying your course books with a friend. You discover that you are short by NT$500 and you ask to borrow this amount. You promise to repay this money as soon as you are able to. Your friend says that s/he needs the money and expresses reluctance to lend it. What, if anything, would you say after your request had been refused? Write down exactly what you would say. Use the exact words you would speak.
6. Unavoidable conflicts have caused you to miss several classes. You don't really

> know anyone in your class so you ask a classmate if s/he would be willing to let you photocopy her classnotes after class. There is a copying machine nearby. S/he refuses to lend you the classnotes. What, if anything, would you say after your request had been refused? Write down exactly what you would say. Use the exact words you would speak.

Following the open-question, they were asked to circle on a seven-point scale from 'strongly disagree' as 1, to 'strongly agree' as 7 for the following statements:
1. I would just drop the subject.
2. I would give reasons to try to persuade my classmate to comply with my request.
3. I think that my request imposes on the other person.
4. I feel it is very important to persist in asking this request.

5.1 Male and female difference in post-refusal speech strategies

Factor analysis and the Student t-test have told us the difference between men and women. It is therefore, hypothesized that women use the maxim of offense less often than men do; instead women use more often the maxim of agreement to show they don't like to stand out in speech. Men have been conditioned from early childhood to be adventurous in both behavior and language. Women have been conditioned to approve and support men and those in authority.

Table 6 shows the numbers of men and women in applying the maxims of offense and not applying it, in their post-refusal speech act after they are refused in the above 6 open FTA requests. Table 7 shows that 28 (9.4%) of the 298 males applies the maxim of offense in post-refusal speech and only 14 (4.7%) of the 298 females uses the maxim. The Chi-square value is 5.02 (p-value=0.013 for one-tailed test), which means that there are significantly more males who use the maxim of offense in post-refusal speeches.

Table 6: Number of those who apply the maxims of offense: males vs females

	Males	Females
1. Refused by good friends (of car borrowing)	7	1
2. Refused by older sister (large amount of money)	1	1
3. Refused by a good friend (received a lot of help from you)	7	9
4. Refused by a good friend (having good reasons for preparing for a test)	1	0
5. Refused of small amout of borrowing	4	1
6. Refused by an acquaintance	8	2
Total	28	14

Table 7: Applying the maxim of offense or not: males vs females

	Males	Females
Applying the maxim of self-defense	28 (9.4%)	14 (4.7%)
Not applying	270 (90.6%)	284 (95.3%)
Chi-square value=5.02, p-value=0.013 (one-tailed test)		

In response to refusers for the above six FTA requests, males and females' circling of the seven-point scales are counted and Chi-square test for the homogeneirty of males and females is done. It is found that males and females are significantly different in their judgments about their own personality and characteristics for three of the above four statements. They are not different for the statement of 'I think my request imposes on the other person.' For easy interpretation of the data, we rename the choice of 1, 2, or 3 as 'disagree', 4 as 'neutral', and 5, 6, or 7 as 'agree'. In other words, we changed the 7-point scale into a three-point scale for the sake of analysis. It is then found that significantly more males said that they would like to drop the subject (or change the topic) than females did (48.99% to 39.6%; df=2; with Chi-square value being 7.309 and p-value 0.026); significant more males said they would try their best to persuade the refuser than females did (36.58% to 24.83%; df=2; Chi-square value being 13.579 and p-value being 0.001); more males said that they should persist in asking their request than females (16.11% to 6.04%; df=2; Chi-square value being 16.669 and p-value < 0.001). The result in this paragraph is also consistant with the finding of factor analysis: women are reluctant to be unique, to speak up, and to do something which others do not approve of; therefore, women are reluctant to abruptly drop the subject immediately after they are refused, reluctant to give reasons to try to persuade the interactant and to persist in asking the request.

6. Conclusion

When a person reacts to a refusal by the strategy of criticism, reprimand, threat, giving the refuser a lesson, he protects his own face, without saving the addressee's face. It is a maxim of offense, to return an FTA with an FTA. The maxim is used more by the high-status person than by the low-status, more by males than by females.

Though twenty-three post-refusal strategies were listed in this study, in Sub-study I, only 18 out of the 23 are used in response to a refuser for an FTA request. The strategies of 'criticism', 'asking the refuser to find an alternative', 'giving a lesson', 'comforting the refuser or self', and 'Joke' are not applied. Thirteen of the 23 strategies are used in response to a refuser for an FSA request, or an invitation. The five strategies not used in response to request refused are not used; neither are the strategies of 'saying thank you', 'external yes, internal no', 'reprimand', 'offering self an alternative', and 'repeating the request'. Fifteen out of the twenty-three strategies are used in response to a suggestion refuser. The strategies not used are 'changing the topic', 'external yes, internal no', 'threat', 'offering self an alternative', 'modifying one's request', 'postponement', and 'joke'. Seventeen out of the 23 strategies are used in response to an offer refuser. The six unused strategies are 'changing the topic', 'external yes, internal no', 'criticism', 'reprimand', 'asking the refuser to find an alternative', and 'comforting the refuser and/or self'.

After being refused, women are more likely not to persist on their request. It is wondered, whether women are less likely to refuse than males because they are afraid to be offensive. Further studies are invited.

Notes

[1] In this short article with a limit of maximal 20 pages, I cannot give enough examples for each strategy of post-refusal speech act, nor can I give the details of how I manage the procedure of factor analysis on the SAS (Statistic Analytical System) package. I have the intention of expanding it to give a clearer view of Mandarin post-refusal speech acts. If readers are interested in the whole article, it will be sent upon request on completion.

[2] Though suggestion is supposed to be an FSA, it seems that the acceptance of it does not follow the rules in which one is supposed to accept other kinds of FSA invitation or offer.

[3] It seems that the post-refusal speech acts must be divided into two kinds, those of the refuser and those of the refusee, then they can be discussed in a clearer detail. However, in this study, we do not try this. We will try it in later studies.

[4] We agree to Levinson's observation (1983: 351) that a pre-request allows the requester-to-be to check out whether a request is likely to succeed, and if not to avoid one in order to avoid a subsequent dispreferred responses, a rejection.

[5] The ambiguity of THANK YOU is discussed a great deal in Liao (1994).

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臺灣閩南語的趨向詞 ----
方言類型和歷史的研究

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引言．

本文研究臺灣閩南語的趨向詞 '起'，'落'，'轉'，'倒'，'過'，'入'，'出'，'上'，'來'，'去'做為動詞補語的語意和語法的功能．我們將分析各個詞的最基本的語意特性，透過和國語及其他方言的比較找出趨向動詞的方言類型，比如，很清楚的看得出閩國語之間對立詞的相應關係：起-落 <> 上/起-下，去-轉/倒 <> 去-回，入-出 <> 進-出．方言類型的差異也反映了歷時的時代層次．'轉'和'回'自古以來就是並存的方言詞，但是'進'確實比'入'晚出，反映了時代的先後．作為動詞後的趨向補語，閩國語有如下的對應關係：

(閩)	起來	落來	轉來/倒來	過來	入來	出來
	起去	落去	轉去/倒去	過去	入去	出去
(國)	上來/起來	下來	回來	過來	進來	出來
	上去/(起去)	下去	回去	過去	進去	出去

除了方言詞的不同外，兩者之間最明顯的差異是閩南語沒有'上來'和'上去'的說法．因此'起來'和'起去'涵蓋的範圍比國語還廣，另外，國語'起去'的說法幾近絕跡，形成一個有趣的空缺．雖然上列的閩南語國語趨向補語有一部份產生虛化的現象，如'講落去'，總的來說，閩南語趨向補語以單音節不帶'來'或'去'為多，不像國語雙音節補語那麼發達，比如，閩南語沒有'唱起歌來'這樣的說法．歷史上也是單音節比雙音節的趨向補語先出現，閩南語反映比較早的發展階段．

閩南語的單音節趨向補語'來'有虛化的始動意，而'去'有虛化的完成意，但是'去'還相當具有滋生力，基本上保存了晚唐的語法特性．國語裡'了'兼表始動和完成的時貌，在歷史的發展上顯然是中和化的結果，反之，閩南語呈現了詞彙的多樣性，表完成的時貌詞有並存甚而競存的'去'，'了'，'過'，'煞'等幾個語詞．

閩南語的趨向詞由具體的詞彙意義經過虛化發展出抽象的語法意義，可以在動趨式中表示始動，持續，完成等的時貌意義，已如上述，也可以在動補式中表示可能的意義，如'買袂起'，'讀會來'，'做袂去'，'看袂出'等．此外，我們考查這些引申的用法和連音變化的現象．

本文的結構組織如下：1．閩南語和國語趨向詞系統的比較，2．趨向動詞的時代層次和方言類型，3．趨向動詞的系列性，4．動詞，賓語，補語的詞序問題，5．動趨式的連讀形式，6．成語性的動補賓結構，7．詞匯性的可能式，8．動趨結構的起源和發展，9．動詞和補語的語意關係，10．'去'，'了'的演變歷史，11．結語．

1．閩南語和國語趨向詞系統的比較．

本文所討論的趨向詞有兩種：(1) 單一趨向補語，(2) 複合趨向補語．以下先列出閩南語和國語兩種趨向詞的對應系統：[1]

單一趨向補語：

(閩)　起[2]　落　轉/倒　過　入　出　來　去

(國)	上/起	下	回	過	進	出	來	去

複合趨向補語:

(閩)	起來	落來	轉來/倒來	過來	入來	出來
	起去	落去	轉去/倒去	過去	入去	出去
(國)	上來/起來	下來	回來	過來	進來	出來
	上去/[3]	下去	回去	過去	進去	出去

閩南語單一趨向補語的基本義簡單地說可以這麼描述. '起'和'落'指向上和向下的動作, '轉/倒'指從原地出發再返回原處, '過'指一點到另一點, '入'和'出'分別指向封閉的三度空間內部和外部移動, '來'指往發話者的方向移動, '去'指離開發話者往遠處移動. 有關閩南語趨向詞的引申意請參看附錄.

從上表可以看出, 單一趨向補語加上指示詞'來'或'去'就可形成複合趨向補語. 閩國語兩相對照之下, 趨向詞的異同可以歸納為三類: (1) 用詞完全相同, (2) 用詞不同, 如 落:下, 轉/倒:回, 入:進, (3) 其中一個方言有空缺, 如國語沒有'起去'. 在比較不同的音韻系統時我們都知道同一個語音在不同的系統有不同的功能. 同理, 同一個趨向補語在閩國語中也有不同的語法語意功能, 這點尤以趨向詞的引申用法最為明顯. 以下就扼要逐一加以討論.

就單一趨向補語'去'而言閩國語都有引申的完成意. 閩南語裡這個用法有一定的限制, 但仍然頗具有滋生力, 可是國語這樣的'去'只限跟少數的動詞連用. (呂 1980: 401)

趨向補語在方言中發展了不盡相同的引申意. 因此方言間趨向補語有錯綜的對應關係. 例如, 有些情況閩南語單一補語相當於國語複合趨向補語:

閩南語		國語		
動詞	補語	動詞	補語	
昏	-去	昏	-過去	
昏昏死死	-去	死	-過去	
睏	-去	睡	-過去	[4]
做/創袂	-來	幹不	-過來	

有時方言間不同的趨向補語產生可對應的引申意.

閩南		國語	
精神	-起來	醒	-過來
活	-起來	活	-過來

閩南語的'起來'至少有兩個引申意: (1) 完成 (動作的完成或目的的達到), (2) 始動 (動作或狀態的開始). '起來'原來可能只有完成意,[5] 始動意可能是與國語接觸而產生的. 始動意也可以用'地...阿'表示.

閩南語		國語	
例子	語意	例子	語意
衫褪起來	完成/脫離	脫下一件衣服來	完成/脫離
紙liah起來	完成/脫離	把紙撕下來	完成/脫離
樹阿剉起來	完成/脫離	把樹砍下來	完成/脫離
門開起來	完成/脫離	把門打開	完成/脫離
擱地褪衫阿	始動	又脫起衣服來了	始動
地睏阿	始動	睡起來了	始動

地開門阿	始動	開起門來	始動

以上可以看出一個有趣的對照：完成/脫離的語意，閩南語用'起'(向上的動作)表示，而國語用'下'(向下的動作)表示．

'起來'在國語裡始動意味很濃，閩南語則多指完成．試比較 [6]

閩南		國語	
例子	語意	例子	語意
寫起來啊	完成	寫了起來	始動
記起來啊	完成	記了起來	始動 [7]

閩南語'起來'的始動意使用的範圍本來極有有限，但年輕一代受到國語的影響，這種語義就用開了．

2．趨向動詞的時代層次和方言類型．

'入'和'進'是同意詞，有時代先後之別．從歷史文獻來看，趨向動詞'入'先出現，一直到元代'進'才開始出現，取代了'入'．[8]

這是北方方言的情況．語法虛詞在各個方言發展的速度不一致，閩南語裡只有趨向動詞'入'而沒有趨向動詞'進'．這一點說明閩南語的'入'反映了宋以前的時代層次．因此，'入'和'進'不只表現方言類型的不同，也表現時代的先後．

閩南語趨向動詞除了反映時代層次還表現出方言的類型．相對於北方官話的'上'，'下'，閩南語'起'，'落'是一對反義的趨向動詞．'起'表示向上的動作，'落'表示向下的動作． 同樣地，'回'，'轉'形成北方和南方方言的分野：

北方	回	下	上
南方	轉	落	起

'轉'，'落'的用法是南方方言，如閩語，客家語，贛語，吳語，的特色．[9]

另外，就閩南語內部系統而言，'上'，'起'有文白之分，'上'只能用於一些套語中，如，'看袂上目'．

3．趨向動詞的系列性．

雖然漢語沒有屈折變化，但是還有縱聚合(paradigmatic)的系列關係．相關或對立趨向動詞的發展常有不均衡的現象．'起去'和'起來'都表示向上的運動，就原始意義來說，兩者的不同是前者往遠處移動，而後者往近處移動．不過這對相關的趨向動詞並不做同步的發展．這點可以從兩方面來看．以出現的頻率來說，'起來'顯然比'起去'的見次多得多．[10] 從語意的擴展而論，'起來'發展出了非趨向意義，可以表示'始動'和'完成'的時貌意義．'來'，'去'分別表示向近處和遠處移動．作為趨向動詞兩者出現的頻率很難分出高下．除了當趨向詞外兩者都可以做時貌的標誌．'來'表示始動，'去'表示完成．作為一個時貌詞'去'的滋生力遠比'來'強，因此頻率也為'來'望塵莫及．

國語裡'上'和'下'是一對對立的趨向動詞或補語，在閩南語裡'上'雖可用於口語中，可是使用的範圍比語意相近的'起'小多了， 且帶有文語的味道，只在少數的例子中用做趨向動詞，但絕不能做趨向補語．'下'只殘留於文語中，不能當作口語中的趨向動詞，這個語意空缺由'落'承擔．閩南語的'起''落'和國語的'上''下'都分別是一對滋生力很強的趨向動詞或補語．

國語裡表示向上位移的趨向動詞除了'上'之外還有一個勢均力敵的'起'，兩者的語意略有不同，'上'有達到終點的意思．閩南語裡'上'使用的範圍極為有限，因此'起'涵蓋的範圍比較大，相當於國語'上'或'起'的範圍，語意上兩可，可以指有終點或沒有終點的向上位移．

4．動詞，賓語，補語的詞序問題．

早在1944年(呂 1984: 132-144)呂叔湘就從歷史語法的觀點提出漢語動詞，賓語，補語的詞序發展問題，對補語逐漸向動詞接近的趨勢，略有提及．後來岳(1984)又對'得'字句的詞序做了更細緻的研究．他根據文獻語料得出'得'字句的詞序和出現的年代：

	詞序	出現年代		
1a.	動 得 賓 補	始於唐代	宋代開始普遍	明代還有
1b.	動 得 補 賓		宋代還未普遍	元代逐漸普遍

如果不考慮'得'字動，賓，補的相對位置有下列兩種可能性：

	詞序			出現的方言
1c.	動	賓	補	閩南
1d.	動	補	賓	國語

這裡補語指引申的單一趨向補語，舉例如下：

	閩南語	國語
1e.	看儂無起	*瞧人家不起
1f.	*看無起儂	瞧不起人家

我們可以看出閩南語反映出較早的時代層次，國語反映較晚的時代層次．

動趨式和處所賓語連用時，閩南語兩個趨向補語都放在處所賓語之前，[11] 國語兩個趨向補語通例由處所賓語隔開．舉例如下：

閩南語	國語
走落樓骹	跑下樓去
行入去厝內	走進屋裡去
走起去山頂	跑上山去
走轉去厝e	跑回家去
行起來樓頂	走上樓來

閩南語的結構公式：
動詞 + 趨向補語 1 (+ 趨向補語 2) + 處所賓語 (+ 方位詞)

國語的結構公式：
動詞 + 趨向補語 1 + 處所賓語 (+ 方位詞) + 趨向補語 2

兩個方言對照之下可以看出詞序的不同限制：

閩南語	國語
*行落山骹來	走下山來
行落來山骹	*走下來山

閩南語另外的變式是把處所賓語提前：
動 + 介詞 + 處所賓語 + 方位詞 + 趨1 + 趨2

淹對厝內入去

如果賓語是非處所名詞，動趨式和賓語的詞序又有所不同：

閩南語	國語
?theh 出來一本書	?拿出來一本書
*theh 出一本書來	拿出一本書來
theh 一本書出來	拿一本書出來

和處所賓語的情況一樣，第二種結構表現出兩個方言詞序限制的差異．但是就第一種結構而言，即趨向補語在賓語之前，兩個方言都不太通順．這點和和賓語是處所詞的情況不一樣．

5. 動趨式的連讀形式．

動趨式中動詞讀單字調，趨向補語讀輕聲．比如，'無去'的單字調是 13 (陽平) + 21 (陰去)．這個詞組有兩個意思，即兩種結構分析方式：(1) 動趨式：13 (單字調) + 輕聲，解作'不見了'，(2) 否定詞 + 動詞：21/33 (連字調) + 21 (單字調)，解作'沒有去'．[12] 如上所述，主要動詞用單字調，趨向動詞念輕聲，但是如果趨向動詞後面又有詞語，就不能念輕聲．(鄭 1993: 142) 試比較：

起去　[動詞 + 趨向補語]
51 + 21 > 51 + 輕聲

起去山頂　[動詞 + 趨向補語 + 處所賓語 + 方位詞]
51 + 21 + 55 + 51 > 55 + 51 + 33 +51

'起去'的'去'讀輕聲，所以主要動詞讀單字調．'起去山頂'的'去'讀連字調(即重音調)，因此'起'也讀連字調．有趣的是，'起去山頂'的'去'雖然是在強音節的位置，聲母 k'- 還可以弱化為 l-． 可見音段和超音段不是同步發展的．

一般來說，不管是單一或者複合動趨式動詞都是讀單字調，趨向補語都是讀輕聲．但是如果信息重心從主要動詞轉到第一個趨向補語．那麼動詞和第一個趨向補語就讀連字調而第二個趨向補語讀輕聲．

趨向補語除了變為輕聲外，聲母韻母也產生變化．請先看下表：

起去　k'i k'i > k'i li
起來　k'i lai > k'iai　k'e

落來　lo? lai > luai
落去　lo? k'i > loi

轉去　tŋ k'i > tŋ i

倒來　to lai > tuai
倒去　to k'i > to i

入去　lip k'i > lip i
出去　ts'ut k'i > ts'ut i

歸納起來有三種變化方式：(1) 阻塞音變響音，如 k'- 變 l-，(2) 輔音的失落，如 聲母 l-，k'- 或韻尾喉塞音 -? 的丟失，(3) 元音的融合，即由於第一音節塞音韻尾(如果有的話)和第二音節聲母的失落，前後音節的元音融合起來．第一二種的變化主要出現於第二個音節．第三種變化使兩個音節合成一個音節，形成[合併的語形] portmanteau morph，即一個語形等於兩個語素的合音．

詞匯性可能趨向補語，如'寫袂來'，雖然出現在最後一個位置可是讀單字調，與上述的趨向補語不同.

6. 成語性的動補賓結構.

有一類的成語是由動詞+趨向補語+賓語所組成. 動詞不能直接接賓語，必須中間插入趨向補語才行. 有的還只能出現於帶結構助詞'會'或'袂'的可能式中，把結構助詞抽掉之後就不合語法了，如'行袂開骹/*行開骹'. 舉例如下：(標星號者為不合語法)

閩南語	國語
講會出喙	說得出口
講出喙	說出口
行袂開骹	走不開
*行開骹	
聽入耳/聽落耳	聽得清楚
聽無入耳/沒聽入耳	聽不清楚
行得入心	打得火熱 (胡 1994: 88)
看袂上目	看不上眼/看不起
看會上目	看得上眼/看得起

我們以'看上目'為例. '看'不能直接接'目'，'看目'不成話. '看'後頭加上'上'才能接賓語，形成成語；這裡文語層次的'上'只能出現於套語中. 以上這類成語，賓語都是指人體的部位. 其中一類不帶結構助詞也可以成立這類成語可以用動補賓結構做底子去推衍可能式即可. 另一類不帶結構助詞不行. 我們就不能以動補賓結構做基底去衍生了. 這個問題涉及到語意，詞法，句法的互動關係值得進一步的探討. 其他類似的成語組合 idiom chunk 有 '睏落眠' [睡著]，'行無路' [吃不開]等. 這兩個成語拿掉趨向補語後動賓式還可以成立，但是語意已經離遠了. '睏眠'是指[睡意]，而'行路'是字面[走路]之意.

7. 詞匯性的可能式.

這裡詞匯性的可能式只限定於結構助詞後頭帶趨向補語，趨向補語已失掉具體的趨向意，而發展出引申意. 這種可能式雖然有一定滋生力，但不能完全在句法的層次上處裡. 此外，語意也不完全是組合性的，因此必須在詞匯中列舉. 從以下的結構和例子可以看出兩點：(1) 可以做這種可能式的趨向閩國語不盡相同，(2) 閩南語的結構助詞比國語的豐富多了，且兩個以上的助詞可以連續出現；連續出現的助詞(如 -會得-)也許反映了兩個不同的層次. 可以做可能式的補語有下列的趨向詞：[13]

7.1. -來，-去.

教會(得)來　讀會(得)來　講會(得)來
教袂(得)來　讀袂(得)來　講袂(得)來

做會(得)去　走會(得)去　食會(得)去　[吃不了] (比較 吃袂了)
做袂(得)去　走袂(得)去　食袂(得)去　[吃不完]

閩南語'來''去'都可以當可能式補語，國語只有'來'可以. '去' 發展出與名詞有關的全稱計量語意.

7.2. -起，-落.

買會起　看有起　學會起
買袂起　看無起　學袂起

食會(得通)落　　拍會落
食袂(得通)落　　拍袂落

7.3. -轉.

講會ling轉

7.4. -過.

(大氣)喘會過　　騙袂過

7.5. -出.

看會出　　[看不出，不能辨別]
看袂出　　[看得出，能辨別]

8. 動趨結構的起源和發展.

根據潘(1980)動趨結構可以歸納為五種:

A. 動 + 單趨補
走　來/去
上　來
下　去

B. 動 + 複趨補
走　上來
走　上去

C. 動 + 單趨補 + 賓
走　上　台
走　下　台

D. 動 + 賓 + 單趨補
看　戲　去
看　戲　來

E. 動 + 複趨補 + 賓 + 複趨補後
走　上　台　去
走　上　台　來
唱　起　歌　來

從歷史的發展來看，單趨補語 A C 最早出現，起源於先秦，盛行於漢代，以後再擴展為複趨補語 B D, 而 E 式近代才出現. 每一種的出現年代和個別的發展列出如下:

A. 式中單趨補語由'入', '去'擴散到 '出','來','下'.
B. 起源於西漢，漢以後陸續產生'出去', '上去', '過去', '過來'.
C. 兩漢漸多起來
D. 漢代開始
E. 宋代以後才有

漢語動趨式的發展有三點值得注意: (1) 由單趨補語演變成雙單趨補語, (2) 動趨式的詞匯擴散現象, (3) E 式是在 C 式之後發生的.

就第二點而言，在 A. B. 式中我們觀察到趨向補語並不是一夜之間同時湧現的，而是同一系列的趨向補語陸續出現. 這就構成了句法的詞匯擴散現象.[14] 就第三點而言，E 式是在 C 式中的賓語之後加上指示詞'來', '去'而成的，不是經由賓語和指示詞換位而成的. 閩南話不能有E式，因為還沒有發展到那個階段.

9. 動詞和補語的語意關係.

動趨式中趨向補語隨著不同類的動詞而有不同的語意. 趨向補語的基本義會因不同的連用動詞而衍生各種引申義. 動詞和趨向補語的搭配關係會造成前者對後者的影響. 有的語意因組合syntagmatic 關係而形成, 如法文 ... pas 的否定意是由與它合用的 ne 傳遞而來了. 現在以趨向詞 '去'為例子說明.

閩南語'去'至少有下列五個語意:

(1) 趨向意: 往遠處移動, 如 '走去', '飛去'.
(2) 引申意1: 表示動作的完成, '食去' [吃掉], '燒去' [燒掉] 或表明事物的消失, 如, '無去' [不見了], 'phang見去'[不見了], 它的語意近似 '了' /liau 2a/, 但搭配關係不同, 如:

看了　講了　想了
*看去　*講去　*想去

(3) 引申意2: 表示進入某種狀態, 已沒有轉圜的餘地, '爛去', '冷去', '暗去'. 試比較 '-去'和'-阿':

閩南語		國語	
瓜果	爛去	蘋果	爛掉
瓜果	爛阿	蘋果	爛了

'瓜果爛去'是指蘋果爛得很徹底, 而'瓜果爛阿'是指蘋果剛開始爛的階段. '去'表示動作已達成, '阿'表示進入新的狀態, 而那個狀態還未到達終點.

'去'當時貌補語時有一定的結合限制: 它只能附著於兩極程度詞 polar gradable terms 的負極詞之後:

冷去 [冷了, 冷掉]　暗去 [暗了, 暗掉]
*燒去 [熱了]　*光去 [亮了]
燒阿 [熱了]　光阿 [亮了]

(4) 引申意3: 除了表示動作完成還附帶有蒙受和遭受之意, 常用於被動式中: (比較陳 1993)

衫乎雨沃tam去.　[衣服被雨淋濕了]
Chhan乎日頭曝焦去.　[田給太陽曬乾了]

'去'原來是動作完成之意, 蒙受和遭受之意可能來自被動式.

(5) 引申意4: 實意弱化, 只剩下語法的意義, 當結果式動補結構的結構助詞:

煮去真好食　[煮得很好吃]
縛去真an　[綁得真緊]

(比較其他的結構助詞: -了-, -乎-, -著-, -ka- 和 國語的 -得-)

10. '去', '了'的演變歷史.

根據劉江白曹 (1992: 111--121, 129-138) '去', '了'的演變歷史可以下表加以概括:

去 的消長				
	唐初	晚唐五代	宋代	元代
	初露端倪	廣泛使用	持續使用	漸趨消亡

了 的消長				
	唐初	晚唐五代	宋代	元代
		還是動詞	使用範圍 逐漸擴大	繼續發展

'去'和'了'時間的交叉發生於宋代以後，之後兩個詞的命運各有不同：'去'消亡，'了'擴大．這是官話系統的演變情況．這兩個詞在閩南語的發展有所不同．'去'作為時貌詞已在國語裡消失了，可是它在閩南語生命力還很旺盛，為表完成意的時貌詞，反映出晚唐的語法特色．[15] 閩南語的非趨向補語'了 liau'附於動詞之後也表示完成之意，也反映了宋以前的語法特性．

11. 結語．

本文第一節比較了閩南語和國語趨向詞系統，並討論兩方言趨向詞引中意用法上的歧異，第二節分析閩南語趨向動詞中的時代層次和方言類型的特性，第三節探究趨向動詞的系列性，指出結構不均衡的現象，第四節結合歷史文獻論證閩南語的動賓補結構反映比官話早的時代層次，並說明賓語的性質會影響語序．第五節討論動趨式的連讀形式，包括變音，失音和合音的現象第六節研究成語性的動補賓結構，並談論詞匯，語意，句法的關係，第七節介紹詞匯性的可能式，其中補語用的是趨向詞，第八節探索動趨結構的起源和發展，指出動趨式的詞匯擴散現象及與閩南語語序的關係，第九節討論動詞和趨向詞語意的互動關係，第十節從'去'和'了'的演變歷史來看這兩個時貌詞的時代層次．

附註：

[1] 閩南語趨向詞的研究請參考 Cheng (1982). 國語趨向詞的研究請參考范 (1963), 劉 (1989: 29-92), 房 (1992: 486-552).

[2] 閩南語裡跟'起'語意相近的'上'屬文語層，使用的範圍極為有限，且只能做趨向及物動詞，不能當趨向補語．

[3] '起去'在北京話已接近絕跡．(鍾 1988) 臺灣通行的國語裡這個複合趨向詞已銷聲匿跡．

[4] 相當於閩南語的'睏去'國語也有'睡過來'(注意這裡'過來'是引申意)，不過只能用於可能式，如'睡不過來'．另外，'睡過去'也有在睡覺中死去之意．(語料方面國語參考孟鄭孟蔡 1987: 676, 閩南語參考宋 1987: 173-336, 胡 1993ab, 1994)．

[5] 小川等 (1931-32 上冊: 277) 只列舉 [完成]意，沒列[始動]意．如果不是漏記，這可以證明我們的假設．

[6] 這裡的國語的趨向補語是參照 呂 (1980) 和 孟鄭孟蔡 (1987).

[7] 閩南語 '睏起來'是睡醒起來的意思，而'睡了起來'是始動之意，相當於閩南語的'地睏冇'.

[8] 太田 (1958 :210-222).

[9] 客贛語的語料參考李張 (1992: 208, 366), 吳語的語料參考錢 (1992: 960, 1053).

[10] 一般了解國語中'起去'已經絕跡，可是近代漢語或甚至現代北京話還有蛛絲馬跡可尋．參見羅 (1993: 1089-1090)，鍾 (1988)，太田 (1958: 212)，香阪 (1983: 192-193).

[11] Li (1988) 曾指出這一點.

[12] 21 或 13 代表不同次方言的連字調.

[13] 有關詞匯性可能趨向補語，請參考 Chao (1970: 458-480). 這裡部份的語料參考 李(1950)和 Ko (1976).

[14] 在音韻方面 Wang (1969) 提出語音演變是透過詞匯擴散現象而完成的觀點，(參看 Wang and Lien 1993) 最近也有學者論證其他方面(如句法)也有詞匯擴散的現象．(參看 Mei 1980, Tottie 1991, Yue 1993, Lien 1994).

[15] 陳 (1992) 根據[祖堂集]的語料論證晚唐時代'去'已經發展成了表完成意的時貌詞． 他又指出福州話的'去'附在動詞的後面也表示狀態變化的完成．(比較李 1990)．可見'去'的這種用法在閩南和閩東方言都還保留著．有關閩南語'去'研究可參閱 Chen 1992, 陳 1993.

附錄：趨向動詞的引申意

以下引申意後都接例子，沒有列出表示沒有引申意.

來	始動	'老來phai命' [老了受苦]
去	完成	'gong去' [呆住了], 'au去' [爛掉], '燒去' [燒掉]
...來...去	反復	'罵來罵去'
起	始動	'想起', 'theh起' [提起]
起來	始動	'精神起來' [醒過來], '完成' 開起來 [打開], 合攏 '包起來', 條件子句的標記 '看起來'
落來	繼續到現在	'存落來' [存下來]
落去	繼續到將來	'流傳落去' [流傳下去]
轉來/倒來		'想倒轉' [想回來]
過	完成	'食過', 表經驗 '犯罪過' [犯過罪]
出來	顯露/完成/實現	'講出來'
出去	顯露/完成/實現	'講出去'

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Identifying the Parameters for a Typology of Chinese Affixation*

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Although affixational morphology is limited in the Chinese languages,[1] this study demonstrates that the morpho-phonological patterns of the diminutive/hypocoristic and *zi* affixation are rich enough to merit a detailed investigation. After discussing and comparing different ways to cross-classify the various affixation patterns in more than twenty Chinese languages, I propose a set of parameters which are either phonologically or morphologically defined for an innovative typology of Chinese affixation.

This paper is organized as follows. In §1, I briefly discuss the inadequacy of a more traditional classification for Chinese affixation. In order to include *bianyun* in the affixation system, a different classification is proposed in §2. §3 examines intra-dialectal variation that provides further support for the proposal. Finally, a conclusion is given in §4.

1. Types of Affixation

The traditional view of an affixational typology is determined by Affix Placement, i.e., the position of the affix with respect to the stem, based on which we can classify affixational processes into prefixation, suffixation, infixation, and circumfixation. In Chinese languages, suffixation is the most common type, but the other three are also attested, as shown in (1).[2] Prefixation is not uncommon in Chinese, but infixation and especially circumfixation are rare.[3]

(1) Affix Placement: prefixation, suffixation, infixation, circumfixation

a. Prefixation:	Taiwanese	a - ma		'grandmother'	
b. Suffixation:	Beijing	pan - *er*	-> par	'board'	
c. Infixation:	Pingding	xua - *er*	-> xlua	'flower'	(Xu 1981)
d. Circumfixation:	Yanggu	tu - *er*	-> tlur	'rabbit'	(Dong 1985)

Some Chinese languages also exhibit stem internal alternations in a word formation process called *bianyun* (rime change), where the sounds and/or tones in the rime of a stem syllable (see e.g., Li 1963, Hou 1985, He 1981, 1982) are modified. Some examples of segmental changes from Jiyuan *zi bian yunmu* (*zi* changed rimes) are given in (2). The examples in (2bc) show segmental changes in the vowel and the coda consonant; (2.d) is a case

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[1] In this paper, I use the terms 'language' and 'dialect' interchageablly.

[2] Throughout the paper, place/city names are used to represent the dialects spoken in the area, but common terms like Taiwanese, Cantonese, etc. will be used instead of the place names. In all the examples, tones are marked only when relevant to the discussion.

[3] The only case of circumfixation I know of is Yanggu *er* -noun formation. Lin (1989) posits a cirumfix [l ...r], and Yip (1992) treats *-er* as a combination of a floating feature [lateral] and a suffix [r]. Chen (1992), however, argues that the phonological form of the affix is simply [-r]. If one accepts Chen's arguments, then Yanggu *er* affix is a suffix.

of vowel-coda segmental merger. In the Yangcheng example in (3), a tonal change accompanies changes in both segmental quality and quantity.[4]

(2) Jiyuan *zi bian yunmu* (He 1981)

	stem	zi noun			stem	zi noun	
a.	pi	pi:u	'nose'	c.	tçin	tçi:ŋ	'gold'
b.	xua	xuɔ	'flower'	d.	pan	pã	'board'

(3) Yangcheng *zi bian yunmu* (Hou 1985)

t^{h}ye (31) t^{h}yɔ: (313) 'rake'

In a model of morphological theory like that in Anderson (1992), *bianyun* may be considered a typical case of non-processual morphology. If so, *bianyun* would constitute a separate category along with other word formation processes such as reduplication and compounding:

(4) Word Formation in Chinese:

a. Affixation (prefixation, suffixation, infixation, circumfixation)
b. *Bianyun* (vowel change, coda change, segmental merger, tonal change)
c. Reduplication (XXX, XYY, XYXY, XXYY, etc.) (Chiang 1992)
d. Compounding (NN, VV, NV etc.) (Chao 1968, Li & Thompson 1981)

This treatment of *bianyun* , however, misses two important generalizations. First, *Bianyun* and the majority cases of affixation in Chinese derive the same types of words, i.e., diminutive/hypocoristic and *zi* words, indicating a close tie between these two processes (Lin 1989, 1993). As far as I know, *bianyun* derives only diminutive/hypocoristic and *zi* words, so I suggest that *bianyun* be subsumed under affixation (see §2 below). Second, the various alternations induced by *bianyun* are also typical in many cases of Chinese affixation. Consider, for example, Yiwu *er* suffixation in (5), where we can see vowel lengthening, change in coda consonant, and segmental merger (cf. (3) above). We will see more examples in §3.

(5) *er* suffixation in Yiwu (R. Li 1963, Fang 1986)

a.	di	+	n̩	→	di:n	'younger brother'
b.	doŋ	+	n̩	→	do:n	'basket'
c.	tsau	+	n̩	→	tso:n	'table'

In the framework of non-linear morphology and phonology, reduplication may be treated as affixation with a copying device (Marantz 1982, McCarthy and Prince 1986 among others). McCarthy and Prince (1986) distinguishes two types of reduplication: affixation (partial reduplication) and compounding (total reduplication). In Chiang (1992), Chinese reduplication has also been analyzed as syllable affixation. As for *bianyun*, I have argued elsewhere (Lin 1989, 1993) that *bianyun* is a special type of affixation with templatic constraints on the derived words. If this analysis of *bianyun* is accepted, then together with the reanalysis of reduplication, Chinese word formation processes would consist of only affixation and compounding. With the affixation category to encompass both reduplication and *bianyun* , an adequate classification of affixation patterns would need parameters beyond Affix Placement. This is the topic we now turn to.

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[4] Tones are marked based on Chao's numeral five-point pitch scale, with 1 indicating the lowest and 5 the highest pitch.

2. A Typology of Affixation and *Bianyun*

Lin (1989) takes into consideration the phonological aspects of Chinese affixation and *bianyun* and provides the following classification:

(6) A. Regular affixation: Affixation of a full-segment affix with/without syllable contraction

a. without syllable contraction: e.g. Wushan (Li 1963)

tau + z̩ '*er*' → tau z̩ 'knife'

b. with syllable contraction: e.g. Rongchang (Li 1963)

pei + ər → pər 'cup'

B. *Bianyun* : Affixation of a feature-sized affix with monosyllabic output.

e.g. Jiyuan *zi bian yunmu* (same data as in (3), analysis by Lin 1989, 1993)

pi + [+bk, +rd] (*zi*) → piːu 'nose'
xua + [+bk, +rd] → xuɔ 'flower'
tɕin + [+bk, +rd] → tɕiːŋ 'gold'
pan + [+bk, +rd] → pã 'board'

This classification is based on differences in the phonological shape of the affixes and whether or not the derived word is monosyllabic or disyllabic. For our purpose, we may identity two major classifying parameters to characterize this proposal:

(7) a. Affix Form: full-segment affix
feature-sized affix (degenerate affix, Lin 1993)[5]
b. Stem-Affix Contraction: yes (incorporation of the affix into the stem)
no (affix as a separate syllable)

Let us now examine an extensive list of examples classified according to (7). Examples of common regular affixation are shown in (8) through (14), where the affix stands alone as a separate syllable. With the exception of cases like Taiwanese in (13) and Lichuan in (14) where gemination/resyllabification occur, no phonological alternations are induced in these cases.

A. Affix Form: full-segment; Stem-Affix Contraction: no

(8) *zi* suffixation in Beijing

a. tsuo + tsɨ → tsuo tsɨ 'table'
b. pʰan + tsɨ → pʰan tsɨ 'plate'

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[5] A degenerate affix is in the form of less than a full segment. It may consist of only one or a few features, a prosodic weight unit: mora, or the combination of these two.

(9) *er* suffixation in Taihu (Fang 1993)

a.	hua	+	əl	→	hua	əl	‘flower’
b.	təŋ	+	əl	→	təŋ	əl	’bench’

(10) *er* suffixation in Hangzhou (R. Li 1963)

a.	təŋ (44)	+	ɭ̩ (213)	→	təŋ (44)	ɭ̩ (213)	'bench'
b.	k^huɛ (44)	+	ɭ̩ (213)	→	k^huɛ (44)	ɭ̩ (213)	'chopsticks'

(11) *er* suffixation in Wushan (R. Li 1963)

a.	kə	+	ʐ̩	→	kə	ʐ̩	'song'
b.	tau	+	ʐ̩	→	tau	ʐ̩	'knife'

(12) *er* suffixation in Xining (Zhang & Zhu 1987)

a.	xua	+	ɛ	→	xua	ɛ	‘flower’
b.	kɔ	+	ɛ	→	kɔ	ɛ	‘song’

(13) *zi* suffixation in Taiwanese (Yip 1980; Zhang 1983; Chiang 1990)

a.	kam	+	a	→	kam mã		'orange'
b.	ap	+	a	→	ab ba	(~ a βa)	'box'

(14) *zi* and *er* suffixation in Lichuan (Yan 1989)

a.	k^hio	+	ɛ (*zi*)	→	k^hio	ɛ	‘eggplant’
b.	hai	+	ɛ	→	hai	ia	‘shoes’
c.	mɛn	+	ɛ	→	mɛn	nɛ	‘mosquito’
d.	pa	+	i (*er*)	→	pa	i	‘scar’
e.	pɛn	+	i	→	pɛn	ni	‘notebook’

On the other hand, examples (15) through (20) illustrate the group of dialects in which the affix is incorporated into the stem, often resulting in phonological alternations. We have seen vowel lengthening, nucleus-coda merger, and coda replacement by the suffix in Yiwu above (examples repeated as (15)). The replacement of the coda segment with the suffix is a common result of stem-affix contraction; two more cases, Beijing and Luoyang, are given in (16) and (17). Epenthesis may occur to bridge between a high nuclear vowel and the newly incorporated suffix, as in (16a) in Beijing and (18c) in Zhengzhou. The Rongchang examples in (19) present a case where the suffix substitutes the whole rime of the stem,[6] while the examples in (20) show tonal substitution. As discussed in Yip (1992) and Lin (1993), the stem and affix elements can both be retained as long as the resultant syllable is well-formed. For example, in (19e), the stem rime is not replaced by the suffix; rather, they both coexist in the derived word.

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[6] Another example of this sort is Anxiang *er* suffixation (Ying 1988, Yip 1992).

B. Affix Form: full-segment; Stem-Affix Contraction: yes

(15) *er* suffixation in Yiwu (R. Li 1963, Fang 1986) (=(5))

a.	di	+	n̩	→	di:n	'younger brother'
b.	doŋ	+	n̩	→	do:n	'basket'
c.	tsau	+	n̩	→	tso:n	'table'

(16) *er* suffixation in Beijing (C. Cheng 1973, R. Li 1963)

a.	i	+	r	→	ir	→	iər	'clothes'
b.	pa	+	r	→	par			'rake'
c.	pan	+	r	→	par			'board'
d.	kʰuai	+	r	→	kʰuar			'lump'
e.	iaŋ	+	r	→	iãr			'sheep'
f.	kou	+	r	→	koᵘr			'dog'

(17) *er* suffixation in Luoyang (He 1984)

a.	pi	+	ɯ	→	piɯ	'nose'
b.	mən	+	ɯ	→	məɯ	'door'
c.	ma	+	ɯ	→	mɐɯ	'mother'

(18) *zi* suffixation in Zhengzhou (R. Li 1963)

a.	ua	+	u	→	uau	'socks'
b.	çüɛ	+	u	→	çüau	'boots'
c.	pi	+	u	→	piəu	'nose'

(19) *er* suffixation in Rongchang (R. Li 1963, Lin 1989)

a.	pei	+	ər	→	pər	'cup'
b.	kaŋ	+	ər	→	kər	'cistern'
c.	tau	+	ər	→	tər	'knife'
d.	kuan	+	ər	→	kuər	'officer'
e.	ü	+	ər	→	üər (* ər)	'fish

(20) *er* suffixation in Tunxi (Qian 1991)

a.	mi (55)	+	n (24)	→	min (24)	'riddle'
b.	kʰua (53)	+	n (24)	→	kʰuan (24)	'chopsticks'

With the parameters in (7), *Bianyun* can then be defined as a type of affixation with a different parameter setting from the two regular types discussed above. Examples are given in (21) through (27). A feature-sized affix consisting of a syllable weight unit, i.e. a mora, may contribute to vowel lengthening (Yangcheng in (21), Heshun in (22)) and thus affect the syllable weight of the affixed output; on the other hand, an affix consisting of only a tonal feature (Cantonese in (23)) or segmental features (e.g. Jiyuan in (24)) result in feature changes in the stem. The prosodic mora, 'μ', which is devoid of segmental feature contents, could be filled by the nuclear vowel of the stem resulting in vowel lengthening as in Yangcheng (21) and Heshun (22) or by the default vowel as in Huojia (25). In addition to vowel lengthening and epenthesis, the surface alternations also result from the creation of a new segment by imposing the affixal features on the syllabic coda of the stem, e.g. (21c) and (24cg), or by merging the nuclear vowel and the coda, e.g. (24d) and (25bc). (Since this paper concerns mainly on the general classification of affixation types, we are not able to discuss the analysis of *bianyun* and readers are referred to Lin (1993) for details.) One thing worth noting is that in (21) through (24), the derived words may consist of either closed or open syllables, while those in (25) through (27) require an open syllable output. Such requirement, according to Lin (1993), triggers segmental merger, e.g. Huojia in (25). Segmental losses in (26b) and (27b) may also be considered a response to the same restriction.

C. Affix Form: feature-sized; Stem-Affix Contraction: yes

(21) *zi* rime change in Yangcheng (data from Hou 1985, analysis from Lin 1993)

a.	t^{h}i	+	μ ... [+bk, +rd]	→	t^{h}i:u	'ladder'
b.	pa	+	μ ... [+bk, +rd]	→	pɔ:	'rake'
c.	cin	+	μ ... [+bk, +rd]	→	ci:ŋ (ci:^{o}ŋ)	'heart'

(22) *zi* rime change in Heshun (data from Tian 1986, analysis from Lin 1993)

a.	lu	+	μ	→	lu:	'stove'
b.	tai	+	μ	→	ta:i	'bag'
c.	liŋ	+	μ	→	li:ŋ	'collar'

(23) Cantonese diminutive tonal change (Yip 1980)

a.	üü: (21)	+	[+H]	→	üü: (35)
b.	tsœ:ŋ (53)	+	[+H]	→	sœ:ŋ (55)
c.	yuk (22)	+	[+H]	→	yuk (35)

(24) *er* and *zi* rime changes in Jiyuan (data from He 1981, analysis from Lin 1993)

a.	pi	+	[+bk, +rd] (*zi*)	→	pi:u	'nose'
b.	xua	+	[+bk, +rd]	→	xuɔ	'flower'
c.	tçin	+	[+bk, +rd]	→	tçi:ŋ	'gold'
d.	pan	+	[+bk, +rd]	→	pã	'board'
e.	pi	+	[-bk, +rd] (*er*)	→	piü	'nose'
f.	ma	+	[-bk, +rd]	→	mæ	'horse'
g.	çin	+	[-bk, +rd]	→	çĩü	'heart'
h.	pan	+	[-bk, +rd]	→	pö	'board'

(25) D rime change in Huojia (data from He 1982, analysis from Lin 1993)

a.	li	+	μ ('D')	→	liə	→	iɛ	'Li (surname)'
b.	sun	+	μ	→	suən	→	suɛ̃	'Sun (surname)'
c.	tiŋ	+	μ	→	tiəŋ	→	tiɔ̃	'Ding (surname)'

(26) *er* suffixation in Dinghai (data from Fang 1993, analysis by Lin)

a.	ba	+	[+nas, -bk]	→	bɛ̃	'card'
b.	kai	+	[+nas, -bk]	→	kĩ	'dog'
c.	ŋau	+	[+nas, -bk]	→	ŋɔ̃	'goose'

(27) *er* suffixation in Ezhou (data from Wan 1990, analysis by Lin)

a.	tso	+	[-bk, +lo]	→	tsa	'table'
b.	ɕiən	+	[-bk, +lo]	→	ɕiɛ	'heart'
c.	kau	+	[-bk, +lo]	→	kæ	'cake'

Although the classification based on (7) appears to have successfully merged affixation and *bianyun* , it has not addressed the question of variation in syllable weight. As mentioned above, the contraction of the stem and the affix under *bianyun* produces two distinctive output types: a single syllable (either open or closed) and a strictly open syllable. Such a distinction which goes beyond the Stem-Affix Contraction parameter is also called for in cases such as Jiyuan *bianyun* in (24) where the derived words are grouped into two: a strictly open syllable is required when the nucleus of the stem is a low vowel (24dh), but a high vowel may be followed by a coda nasal or glide (24aceg).[7]

In addition to Affix Placement (as in (1)), I propose three new parameters for a complete classification of Chinese affixation patterns: Affix Form, Stem-Affix Contraction, Syllable Weight. The options within each parameter are shown in (28). (29) exemplifies how these three parameters cross-classify the diverse affixation patterns in various Chinese languages.

(28) a. Affix Form: (i) Full-segment affix
(ii) Degenerate affix
b. Stem-Affix Contraction: Yes/No
c. Syllable Weight: (i) a heavy bimoraic syllable
(ii) a light monomoraic open syllable

(29) A. Stem-Affix Contraction: No
Affix Form: full-segment affix

Examples: Beijing *zi* suffixation, Taiwanese *zi* suffixation, etc. ((8)-(14))

B. Stem-Affix Contraction: Yes

Affix Form	Syllable Weight	Examples
Full-segment	heavy	Yiwu *er* suffixation, Beijing *er* suffixation, etc. ((15)-(20))
Full-segment	light	?
Degenerate	heavy	Yangcheng *zi* suffixation/infixation (21) Heshun *zi* infixation (22)
Degenerate	light	Huojia D infixation (25) Dinghai *er* suffixation (26) Erzhou *er* suffixation (27)

Notice that not every combination of these parameters has attested examples. As shown in (29) there is a gap marked by a question mark. If the affix is separate from the stem, the affix is always in the form of a full-segment syllable; I have not found cases where a feature-sized affix could become a separate syllable in the output. There are two possible ways to solve the problem: one is to reduce the number of parameters so as to eliminate redundancy, the other is to invoke universal principles/constraints for an explanation of the gap in the paradigm. The reduction of the number of parameters would result in undergeneralization and fail to reveal the similarities and differences between regular affixation and *bianyun* . An explanation of the gap lies in the concept of maximization. Maximality Principle in (30) intends to capture the generalization that languages tend to retain as much information as possible.

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[7] I will come back to the transitional cases across parameters below.

(30) Maximality Principle (Prince 1985, Itô 1989):
Units are of maximal size, within the other constraints on their form.

If the output shape of a word is restricted to be a light open syllable, a full-fledged affix does not stand a chance to surface. As examples in (15)-(20) show, e.g. Beijing *er* suffixation, incorporation of a full-fledged suffix into the stem always creates a heavy syllable since the suffix would occupy the coda position of the syllable. On the other hand, a feature-sized affix may surface by being linked to the nucleus of the stem to yield a new segment; e.g., as shown in (25) through (27), the coda as well as the suffix are merged with the nuclear vowel, deriving a segment that contain the features of both the suffix and the original rime. The requirement for a light open syllable output and the addition of a full-segment affix is contradictory, and to achieve such a combination would require extensive loss of materials, a situation deviating away from the Maximality Principle. If this explanation is on the right track, we may never find examples to fill the gap in (29).

In this section, I have demonstrated that three new parameters successfully cross-classify various types of regular affixation and *bianyun* in Chinese and a systematic gap of this typology may be accounted for by an appeal to the universal principle of maximality.

3. Transitional cases

Consider now (31) through (34). These are dialects that cannot directly be classified into the system in (29); they usually exhibit a mixed system allowing different options of one parameter to coexist. I consider them to be transitional cases which are in the process of moving from one type of affixation to another type. In Mancheng, syllable contraction usually applies, but, as we can see in (31ab), if the stem ends in a velar nasal or the high back vowel [u], the suffix would stay as a separate syllable. Lanzhou freely allows the variation between the bisyllabic or monosyllabic output (32). The Yuanyang examples in (33cd) show that when the stem ends in a nasal, the derived *zi* word has to be an open light syllable.[8] As mentioned in §2, the outputs of Jiyuan *er* and *zi* suffixation in (24) vary between heavy and light syllables; Huojia *zi* suffixation shows similar behavior; examples are given in (34).

(31) *er* suffixation in Mancheng (Chen 1988)

a.	aŋ	+	ər	→	aŋ ŋər	'vegetable'
b.	au	+	ər	→	au uər	'peach'
c.	ü	+	ər	→	üər	‘fish’
d.	ɕin	+	ər	→	ɕiər	‘heart’
e.	p^{h}an	+	ər	→	p^{h}ɐr	‘plate’

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[8] See Yip (1992) and Lin (1993) for analyses.

(32) *er* suffixation in Lanzhou (Gao 1985)

a.	ma	+	ɯ	→	ma	ɯ	~	maɯ	'horse'
b.	pʰɛ̃	+	ɯ	→	pʰɛ̃	ɯ	~	pʰɛ̃ɯ	'plate'

(33) *zi* suffixation in Yuanyang (R. Li 1963)

a.	ʂua	+	u	→	ʂuau	'brush'
b.	pi	+	u	→	piᵒu	'nose'
c.	pʰan	+	u	→	pʰa	'plate'
d.	lian	+	u	→	lia	'curtain'

(34) *zi* suffixation in Huojia (data from He 1982, analysis from Lin 1993)

a.	pi	+	[+bk, +rd]	→	piːu	'nose'
b.	tɕü	+	[+bk, +rd]	→	tɕüu	'young horse'
c.	ʂa	+	[+bk, +rd]	→	ʂɔ	'fool'
d.	tɕʰye	+	[+bk, +rd]	→	tɕʰyo	'eggplant'
e.	pʰyaw	+	[+bk, +rd]	→	pʰyɔ	'ticket'
f.	faŋ	+	[+bk, +rd]	→	fɔ̃	'house'
g.	tɕin	+	[+bk, +rd]	→	tɕiːŋ	'gold'

These transitional cases can be characterized according to the proposed parameters as the type of affixation that allows the coexistence of both options within the Stem-Affix Contraction or the Syllable Weight parameters. The proposed classification is shown in (35). The existence of such transitional cases further supports the need to recognize these two parameters.

(35) a. Affix Form: Full-segment
Stem-Affix Contraction: sometimes yes, sometimes no

Examples: Mancheng *er* suffixation (31), Lanzhou *er* suffixation (32)

b. Affix Form: Full-segment
Stem-Affix Contraction: yes
Syllable Weight: sometimes heavy, sometimes light

Example: Yuanyang *zi* suffixation (33)

c. Affix Form: Degenerate
Stem-Affix Contraction: yes
Syllable Weight: sometimes heavy, sometimes light

Example: Jiyuan *zi* and *er* suffixation (24), Huojia *zi* suffixation (34)

We have seen that the same set of parameters account for both the inter-dialectal and intra-dialectal variations in the patterns of affixation. These variations may shed light on how one type of affixation changes to another. I hypothesize that the different types of affixation in (29) represent different stages of a changing process in which a full-segment affix is reduced to a feature-sized affix, stem-affix separation is being replaced by stem-affix merger, and the merged forms are changing from closed heavy syllables to light open syllables; The transitional types in (35) then showcase the change in progress. In terms of the proposed parameters, the hypothesized changing process may be characterized as in (36).

(36) Affix Form: Full-segment affix → degenerate affix
Stem-Affix Contraction: No → Yes
Syllable Weight: Heavy → Light

A detailed investigation to support the hypothesis is beyond the scope of this paper and will be left for future research. The analysis provided here, nevertheless, points out the direction along which one could gain understanding of the formal mechanisms involved in the change of Chinese affixational patterns.

4. Conclusion

In this paper, I propose an expansion of the parameters for a typology of Chinese affixation beyond the traditional general classification in terms of Affix Placement. The process of identifying the appropriate parameters is based on the morphological and phonological patterns of regular affixation and *bianyun*. The systematic gap in the paradigm is suggested to be accounted for by a universal principle. This study not only suggests a new perspective in investigating the similarities and differences of Chinese affixation patterns but also provides a clue for a further study of the mechanisms of variation and change in affixation.

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DISCOURSE ORGANIZATION AND ANAPHORA IN SPOKEN AND WRITTEN CHINESE DISCOURSE*

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1. Introduction

For the past two decades, anaphora has been the focus of considerable research on discourse production and comprehension because it is fundamental in understanding the relationships among cognitive processes, discourse structure and information distribution. There are three influential models of discourse anaphora in the functional domain: the distance model (Givón, 1983, 1989), the structural model (van Dijk & Kintsch, 1983, Fox, 1987; Hinds, 1977, 1979; *inter alia*), and the attention model (Chafe, 1987; Tomlin, 1987).

The distance model argues for a correlation between anaphora and referential distance in discourse, e.g., number of clauses between a given anaphor and its antecedent. The distance model could be a manifestation of a psychological factor, such as short-term memory decay. According to an "iconicity principle" underlying the model, the longer the distance, the harder it is for the hearer to identify the referent, and so a more explicit referential form (e.g., a full noun phrase) is required. The shorter the distance, the easier it is for the hearer to identify the referent, and hence a less explicit referential form (a lexical pronoun or a zero anaphor--ellipsis) is required (Givón, 1983:18). The model recognizes various psychological factors that underlie the distribution of anaphora. However, it overemphasizes the linear nature of discourse and thus fails to account for instances of long-distance pronominalization and short-distance nominalization.

The structural model emphasizes the relationship between discourse structure and anaphora. The hierarchical structure of discourse allegedly controls the use of anaphora: NPs (full noun phrases) are often used at the beginning or peak of a structural unit (e.g., episode, paragraph, etc.), while pronominals (lexical and zero pronouns) are often used within such a structural unit. The model presupposes the importance of hierarchical organization of discourse. Unfortunately, the problem faces difficulties to the extent that structural units such as paragraph, episode, event, theme, etc., are not well defined theoretically. Many structural units are hard to identify in spoken and written texts, and are prone to misinterpretation.

The attention model emphasizes the role of cognitive processes, such as attention and memory, in guiding anaphoric choice in discourse. Tomlin (1987) defines these psychological factors in terms of a discourse unit (i.e., episode). He argues that an episode represents sustained attentional effort and endures until attention is diverted (i.e., an episode boundary is reached). He demonstrates that NPs are used at the boundary of episodes when attention shifts, while pronominals are used within episodes when attention sustains (see also Tomlin & Pu, 1991). The model shows greater sensitivity to subjects and text-specific variations than other approaches in relatively

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simple production tasks. However, the model is less effective in accounting for anaphoric patterning in more complex spoken and written production and comprehension because the model seems to ignore the critical role played by social, interactional, and affective factors.

While sharing the view that there is an important connection between a particular linguistic unit (namely, the episode/paragraph), and a cognitive factor (namely, the limited capacity of working memory), the present study departs from the prior research in two important ways. First, the study argues that cognitive constraints are not the sole factor in determining a speaker's anaphoric choice. Most specifically, discourse is not merely organized in terms of information flow and propositional content. There are often factors that relate discourse and anaphora, such as discourse structure, pragmatic information, and interpersonal factors. We cannot provide a complete account of the distribution of anaphora in discourse processing unless we take into consideration all of these factors. Second, the study compares spoken with written Chinese narratives, and demonstrates that the two modalities exhibit an overall similar pattern of anaphora, although some differences exist because of the specific characteristics of the two types of discourse.

In what follows, We will first explore three important aspects of discourse processing--cognitive constraints, discourse structure, and pragmatic considerations, and the relationship between the three factors and the use of anaphora in Section 2. We will then provide a general interactive principle determining the basic pattern of anaphora in Section 3. While Section 4 will present an experimental study to test the general principle of anaphoric patterning and discusses the results of the experiment, Section 5 will illustrate, with a text-data analysis, that the general principle is also operative in written narratives. Finally, Section 6 will discuss the general findings and the implications of the present study.

2. Factors determining the basic pattern of discourse anaphora

The present study proposes, with data drawn from both spoken narrative production tasks and written discourse, that anaphoric choices made by Chinese speakers are constrained by cognitive, discourse, and pragmatic factors. Cognitive constraints refer to the memorial and attentional processes that underlie anaphoric patterning during narrative production. Discourse constraints specify speakers' hierarchical organization of discourse into smaller units and the marking of these units. Pragmatic constraints include speakers' intention of signaling hearers of the status of a given referent, their effort to avoid referential ambiguity, and their empathy with human central characters. Although these factors have been discussed in theories of anaphoric production in cognitive science, psycholinguistics (Chafe, 1987; van Dijk & Kintsch, 1983; Gernsbacher, 1990; Tomlin, 1987), discourse processing (Fox, 1987; Givón, 1983; Hinds, 1979; Marslen-Wilson, Levy, & Tyler, 1982; Tannen, 1982) and pragmatics (Brown, 1983; Givón, 1989; Grimes, 1978), they tend to be explicated in isolation of one another. We argue that these three factors represents three dimensions of the relationship between discourse and anaphora: the plane of cognition, the plane of discourse structure and the plane of pragmatics. They integrate and interact to determine a speaker's anaphoric choice throughout discourse. Cognitive constraints characterize structured representation of information in memory, which is manifest most conspicuously by the hierarchical units of discourse. Discourse structure of various levels controls the basic pattern of anaphora with regard to the location of each specific referent (e.g., structure-initial or structure-internal), and thematic coherence of each discourse unit. Pragmatic considerations specify speaker's empathy with human central referents and speaker-hearer interaction. Without structural factors, the use of anaphora would appear to be random, and without pragmatic consideration, anaphoric patterning would not be complete.

2.1. Cognitive constraints, discourse organization, and anaphora

The cognitive basis of episodic organization of discourse has been extensively investigated in linguistics, psychology, and cognitive science. Studies have shown that speakers, who are constrained by limited memory capacity, try to organize the overall discourse into sequences of episodes. Each episode consists of a sequence of sentences dominated by a macroproposition (van Dijk & Kintsch, 1983). The macroproposition relates sentence propositions at a higher level and thus derives the global meaning of an episode or a whole discourse from the local sentential meaning of the discourse.

The notion of episode as a semantic unit dominated by a macroproposition has been found to have psychological relevance. Black and Bower (1979), for example, demonstrated in a psychological study of story processing the existence of episodes as chunks in narrative memory. Similarly, Guindon and Kintsch (1982), in their experiment studying the macrostructure of texts, found that macrostructure formation appears to be a virtually automatic process. That is, people appear to form macrostructure during reading and derive relevant macropropositions of a passage as soon as possible. Their findings provided evidence for the “episode” and the "macrostructure" theories of van Dijk and Kintsch (1978, 1983) .

Other studies of story processing (Mandler & Johnson 1977, Haberlandt, Berian, & Sandson 1980, Gernsbacher, 1990) suggest that readers slow their processing at or around the episode boundary. The increased reading time at boundaries exceed that which would be predicted on the basis of sentence level and text level factors. The boundary hypothesis, which derives from these findings, assumes that there are cognitive processes at or around the episode boundary which are not present inside the episode. At the beginning, readers shift from actively building one substructure to start another, and laying the foundation for the new episode consumes more mental effort. Haberlandt et al. (1980), who tested the boundary hypothesis with reading and recall experiments, found that the encoding load was greater at the boundary nodes than elsewhere, suggesting that readers are sensitive to episode boundaries and use them in encoding story information.

Gernsbacher (1990) supports the episodic organization in story comprehension on the basis of various experimental results. She reports that comprehenders capture the episode structure of narratives in their mental representation by building separate substructures to represent each episode. The readers shift to build new substructures for new episodes, when and where information of the previous episode is less accessible to them. It is therefore harder for readers to draw coherence inferences across two episodes than within the same episode.

The cognitive basis of discourse organization helps us further understand the relationship between discourse structure and anaphora. An episode, as a semantic unit subsumed under a macroproposition, is the textual manifestation of a memory chunk which represents sustained attentional effort and endures until an episode boundary is reached. Attention shifts when the processing of the episode is completed. In other words, "the macroproposition remains in Short Term Memory for the rest of the interpretation of the same episode. As soon as propositions are interpreted that no longer fit that macroproposition, a new macroproposition is set up" (van Dijk, 1982, p. 191). At an episode boundary where a change of macroproposition occurs (i.e., new agents, places, times, objects or possible worlds are expected to be introduced), the encoding load is much heavier, the reference under concern is less accessible, and hence a more explicit anaphoric form (e.g., an NP) is required to code the referent. Within an episode, when the macroproposition is maintained, the referent under consideration is more accessible and hence a less explicit anaphoric form (e.g., a pronominal) is sufficient to code the reference.

Indeed many studies on anaphora have reported the alternation between NPs and pronominals to be a function of the paragraph or episodic structure. Hinds (1977), for example, discusses how paragraph structure controls the choice of NPs and pronouns. He finds that noun phrases are used to convey "semantically prominent" information in peak sentences of a paragraph while pronouns are used to indicate "semantically subordinate" information in non-peak sentences. Fox (1987) demonstrates that structural factors of discourse establish the basic pattern of anaphora: NPs are generally used at the beginning of a "development structure" to demarcate new narrative units, whereas pronominals are used within that structure. Marslen-Wilson et al. (1982) also argue that a speaker's use of referential devices is governed by discourse structure and the context of speaking. The general pattern of anaphora is that NPs and proper names are used to establish initial reference at an episode when a particular referent is in a state of low focus, whereas pronouns are used to maintain reference within an action sequence when a particular referent is in a state of high focus.

2.2. Pragmatic, interpersonal factors and anaphora

In addition to discourse structure, pragmatic and interpersonal factors also affect the speaker's anaphoric choices. Speakers, at any given moment, try to help hearers build a structure representation of discourse congruent with their own in order to convey the intended message successfully. The speakers' assessment of the hearers' current knowledge affects both what is said and the structures chosen for saying it.

In narrative production, speakers' referential choice is based partially on an assessment of their hearers' knowledge with respect to a particular referent, and they provide guidance for the hearers to identify uniquely each given referent through the use of anaphoric form. If speakers believe that a concept has already been "activated" or is resident in the hearers' consciousness (Chafe, 1987), they will treat that concept in an attenuated manner, most likely pronominalizing it. If speakers believe that the concept has not yet been activated, they will treat it in a less attenuated manner, most probably nominalizing it. If speakers believe that they need to disambiguate referents for their hearers, they will nominalize them to resolve the ambiguity. In general, speakers' anaphoric choice seems to follow closely Grice's (1967) dictum: do not be more informative than required.

Moreover, when two or more referents have been activated and compete for attention, human referents are preferred to be pronominalized over non-human or inanimate referents. Speakers tend to empathize with a human (Kuno & Kaburaki, 1977, Brown, 1983) because humans are generally more topical, more central, and more frequently attended to in narratives. On the other hand, when two or more human referents are competing for focal attention, the protagonist of a narrative tends to stay in focus longer than non-central characters and is consequently more likely to get pronominalized (Currah, 1990).

3. A general principle of anaphoric patterning

Based on the interaction of all three factors explicated above, the present study proposed the following general hypothesis for the anaphoric patterning in narrative production.

> The basic pattern of anaphora throughout discourse is controlled by speakers/writers' organization of discourse into episodes, that is in turn constrained by cognitive processes of attention and memory. The pattern is completed by the consideration of pragmatic information available for each specific referent.

The general hypothesis involves several claims. First, episodes represent separate memory units in discourse processing. Narrative discourse is not only memorized, stored and recalled as episodes, but also produced as episodes. Second, episodic structure partially controls anaphoric patterning. NPs are used at the beginning of an episode when attention shifts and the reference is less accessible; pronominals are used within an episode when attention sustains and the reference is more accessible. Third, interpersonal and pragmatic considerations complete the pattern. While indefinite NPs are used for the first mentions of referents anywhere in discourse, definite NPs are used for reinstating reference at the boundary, resolving referential ambiguity, and coding nonhuman and noncentral reference within an episode or a subunit.

In order to test the hypothesis and hence the above three predictions, anaphoric patterns in both spoken and written narratives are examined in both experimental condition and naturally occurring written texts.

Since the construct of episodes plays a crucial role in the present study, definitions are needed for the theoretical concepts of episode and episode boundary. The definitions are defined according van Dijk (1982), van Dijk and Kintsch (1983), and Tomlin (1987),.

Episode. An episode is defined cognitively as a memory unit/chunk in the flow of information processing. Attention is sustained in an episode until an episode boundary is reached. Linguistically, an episode is a semantic unit subsumed under a macroproposition. The macroproposition is generally a topical expression, which is derived from a sequence of sententially expressed propositions of discourse. Episodes in a discourse may be of varying length or scope.

Episode boundary. An episode is conceived of as a part of a whole discourse, having a beginning and an end. The beginning and end of an episode are defined in terms of propositions subsumed under the same macroproposition, while the propositions preceding the first and following the last proposition of an episode should be subsumed under different macropropositions. The transition between macropropositions represent episode boundaries. They are normally marked by expressions denoting changes in time, place, scenery, participant, perspective, possible world, etc. Cognitively, boundaries may also be manifestations of attention shifts.

4. The experiment

The experiment was conducted to examine the relationship between cognitive processes, discourse structure and use of anaphora in speakers' narrative production. More specifically, it was designed to test (a) if the structural unit of episodes has psychological relevance, (b) if the episodic structure controls the basic pattern of anaphora, and (c) if pragmatic and interpersonal factors are employed to complete the anaphoric patterning.

In the present experiment, episode boundaries were operationally defined and manipulated by imposing perceptual disruption (i.e., video-cuts) in the flow of visual materials. The manipulation of speakers' attentional effort would presumably affect their episodic organization and hence their use of anaphora throughout discourse production.

4.1. Experimental Method

Stimulus materials. The stimulus material for the study consisted of adaptions of three excerpts from a children's picture storybook (without a written text) about a little boy, "*Here comes Alex Pumpernickel*" (Krahn, 1981). The picture book was chosen for several reasons. First, many of the cognitive processes and mechanisms involved in language processing are not specific to language (Gernsbacher, 1990). They are general cognitive processes and mechanisms. Comprehenders easily segment stories after viewing a non-verbal picture story, or watching a movie without a dialogue (Baggett, 1979). Second, the book consists of eight separate, but related episodes of a story. Each episode describes some activities during a day in *Alex*'s life and each episode is subtitled. Third, with the subtitles removed from the stimulus material, the subjects' recognition of episodes in this experiment would be independent from linguistic information. We would thus avoid risking the problem of circularity in defining and identifying episodes. The purpose of the experiment was to see if subjects would organize, store, produce or recall the non-verbal story in terms of episodes after viewing the picture sequence without any linguistic clues.

The three episodes adapted for the present experimental study are subtitled: (a) *Alex Pumpernickel in a sticky situation (12:00 p.m.)*, (b) *Alex Pumpernickel swats [a fly] (2:00 p.m.)*, and (c) *Alex Pumpernickel lends a hand (10:00 a.m.)*. These three particular episodes were selected because of some pragmatic characteristics of anaphora to be investigated. Each episode consisted of (a) human, nonhuman and inanimate referents, (b) human central versus noncentral characters, (c) old versus new characters and human characters of the same versus different gender. These options would permit us to assess whether the pragmatic considerations of empathy, centrality, and ambiguity resolution play a role in subjects' anaphoric choice.

Each of the three episodes consisted of eight pictures, presented in pairs on each page. The three episodes (i.e., twelve pairs of pictures, with subtitles removed) were made into a black and white video program. The video could be viewed as a cartoon sequence of 12 pairs of pictures from a Macintosh screen. The resulting video program was designed to provide as little background as possible.

Experimental conditions. While watching the video, subjects had to press the computer mouse button to advance from one picture to the next. The transition between pairs took approximately 3 seconds. At the moment the mouse was pressed, its click and the noise coming from the computer as it changed pictures were clearly audible. The brief interrupting period between the video-cuts, together with the accompanying noise, provided strong visual and auditory disruption to the subjects' attention. The disruption between each pair of pictures was inserted to manipulate subjects' cognitive processes of attention and memory. In other words, it served as an imposed episode boundary, which would force subjects to reorient their attention (and hence reorganize episodic structures) so as to continue with their production task.

Two experimental conditions, Even and Odd, were established to test the present hypothesis. In the Even condition, the picture sequence was presented in the original pairs (twelve picture frames); that is, the three original episode boundaries did not cut into any of the twelve imposed boundaries. In the Odd condition, the first single picture of the first episode was presented alone and the rest of pictures were in pairs, with the last single picture of the last episode also presented alone. There were therefore thirteen picture frames in the Odd condition, with two of the three original episode boundaries being embedded in two of the picture frames. That is, the two original episode boundaries conflicted with two imposed boundaries.

Subjects. Twenty volunteers participated in the experiment. They were all adult native speakers of Mandarin Chinese at the University of Alberta. Half of the subjects were male and half female. All subjects completed the experiment in Mandarin Chinese. The subjects were assigned randomly to two conditions, Even and Odd.

Procedures. There were two narrative production tasks: an on-line description task and a recall task. In the on-line task, subjects were asked to watch the video program and at the same time produce a story based on the pictures presented on the screen. They were told to take as much time as needed for each single or pair of pictures. Once finished with a screen, they could not see it again.

Since discourse organization is assumed to be a manifestation of cognitive processes, it was expected that subjects would respond to the episode boundary in exactly the same way, regardless of how the picture sequence was presented. In other words, subjects were expected to recognize and mark the episode boundary with full NPs regardless of whether or not it was embedded within a picture frame.

Upon completion of the on-line description, subjects were asked to recall the entire story they had just described. They were instructed to retell as much as possible of the story, without seeing the picture sequence. Since no video-cuts were present in the recall task, subjects were expected to retrieve the story as consisting of three original episodes, regardless of their experimental conditions. Because the episodes are assumed to act as separate memory units/chunks, subjects should be able to structure and mark such units linguistically.

In the recall task, each of the Mandarin groups (i.e., Even and Odd) was divided into two subgroups: five of each group performed the recall task in oral form and the other five in written form. The task was so divided because Mandarin Chinese makes no gender distinction among third-person pronouns in oral form; all third-person singular pronouns ("he/she/it") have the same pronunciation *ta*. Chinese subjects therefore might have to use NPs to distinguish male characters from female characters in orally retelling the story. However, in written Chinese, a gender distinction is present for personal pronouns, and there are three different forms for "he," "she," and "it." By performing a written recall task, subjects would be able to use disambiguating pronouns instead of NPs. Thus, it could be possible to distinguish disambiguating anaphors from those sensitive to episode boundary conditions by comparison of oral and written productions.

4.2. Results and discussion

General Performance The subjects' general performance across conditions and tasks was very similar in terms of anaphoric production. Subjects in each group produced almost the same number of NPs (Even, 113; Odd, 117) and pronominals (Even, 85; Odd, 77). No statistically significant differences were found. Moreover, when written and oral narratives were compared, no difference was found in the use of lexical pronouns for the human central character: for the Even condition, 27% in the written and 27% in the oral; for the Odd condition, 23% in the written and 23% in the oral. As for the human non-central characters, lexical pronouns used in the written recall were less frequent than those used in the oral recall. Since no differences were found in subjects' anaphoric choice between written and oral recalls, the two sets of data were combined in the present study.

Humanness and Centrality of Referents As discussed in the previous section, speakers tend to empathize first with a human in narratives and use this pragmatic information in encoding referents. This prediction was borne out in our experiment. Figure 1 below shows the frequency distribution of pronominals over the three types of referents (i.e., human, nonhuman and inanimate) for both conditions. While about 49% of human referents were coded by pronominals, nonhuman and inanimate referents were coded by pronominals only about 25% and 11% of the time respectively.

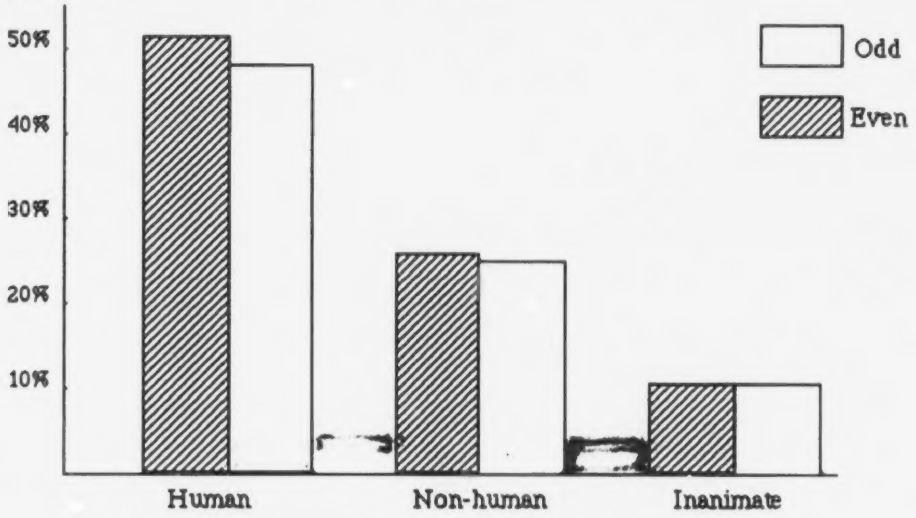

Figure 1: Pronominal Distribution by humanness

Based on Figure 1, the following hierarchy can be proposed for anaphora and pragmatic factors:

Pronominal: Human > Nonhuman > Inanimate

(NP: Human < Nonhuman < Inanimate)

The hierarchy, which conforms to Kuno & Kaburaki's (1977) empathy hierarchy, illustrates a general pattern of anaphoric choice over different types of referents. Since humans are generally more topical, more central, and more frequently attended to in narratives, pronominals (less coding materials) are more frequently used to refer to them. On the other hand, the factor of "centrality", as predicted by the present study, plays a very important role in determine speakers' anaphoric choice during narrative production. Figure 2 below shows the huge difference between the coding of human central and noncentral referents in the use of pronominals.

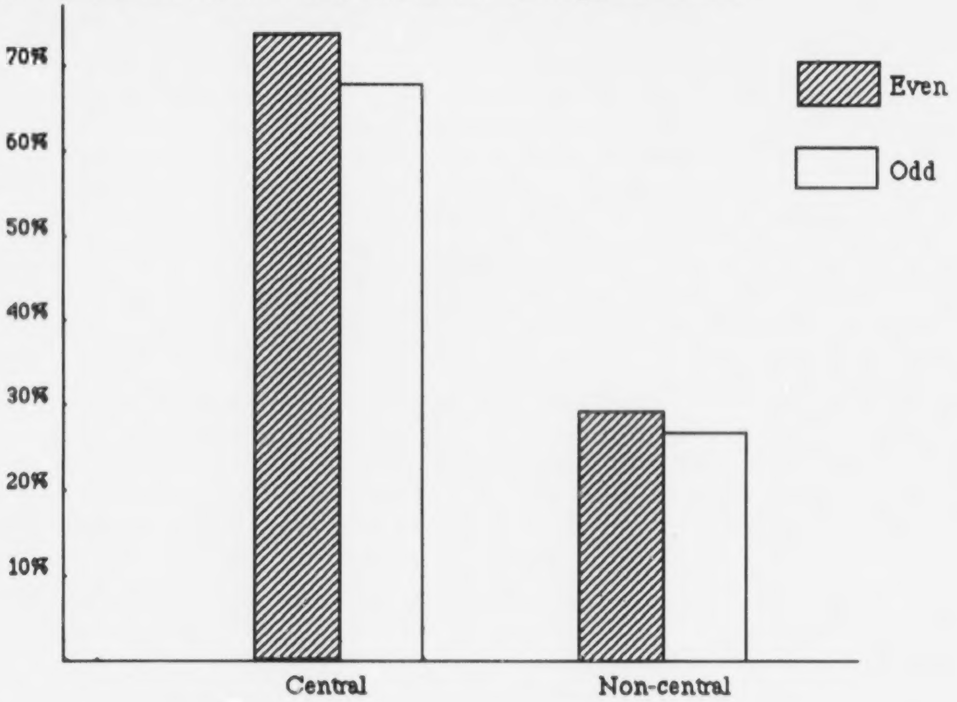

Figure 2: Pronominal Distribution by Centrality

The percentage of human central versus noncentral referents encoded by pronominals is about 70% versus 28% on average across conditions. Although these differences are striking, they are not surprising because human central referents are usually the subject of the narrative, and they tend to be under focus and are discussed more frequently than are non-central referents. Moreover, when human referents is distinguished for centrality, the difference between the proportion of human noncentral versus nonhuman referents is only marginal. This was resulted from the differential use of lexical versus zero pronouns. While lexical pronouns are rarely used to code referents other than humans in Chinese, zero anaphora are very often used to refers to both human and non-human referents.

The experimental results support the claim that "humanness" and "centrality" affect a speaker's anaphoric choice in narrative production: the more central a referent is (i.e., usually human), the more it will be attended to, the longer it will remain in focus, and consequently attenuated anaphoric devices (i.e., pronominals) will be used to code and identify it.

Episodes as Memory Units The episode boundary results obtained from the recall task in all four groups provided evidence that episodes exist as chunks in narrative memory. Although there was no written clue in the video stimuli that there were three original episodes in the story, 17 out of 20 subjects (85%) recognized the three original episodes and mentioned the fact overtly. More interestingly, some subjects' recall data showed the specific monitoring role that macropropositions play in discourse processing. These subjects first recalled the paragraph level theme, or macroproposition, and then the whole episode came flowing out. Some exact wordings are "Well, it's about the boy chasing the fly, ...", "Okay, it's about the kid swatting a fly, ...", or "Yes, it's about the boy and the fly".

In addition to the overt mention of the three episodes, subjects consistently marked the beginning of each episode by using NPs that reinstate the referent throughout their recall task. This demonstrates, as specified by the boundary hypothesis (Mandler & Johnson, 1977; Kintsch, 1977; Haberlandt et al., 1980), that cognitive processes at episode boundaries are different from those inside the episode. The subject had to devote a special effort to encoding the beginning of an episode because (a) the subject tried to grasp the initiating and topical event of the episode during the quick flow of discourse processing, (b) the subject identified the protagonist of the episode and established a new memory location for the protagonist, and (c) at the beginning, the subject shifted the perspective, breaking the sustained attentional effort for the previous episode even when the protagonist of the episode remained the same. In general, much as Gernsbacher (1990) observes, subjects shift to build a new substructure for a new episode, when and where more cognitive efforts are required for laying the foundation of the new episode.

Episode Boundary Results As the present hypothesis predicted, NPs should be used at episode boundaries to reinstate reference when attention shifts, while pronominals should be used within episodes to maintain reference when attention is sustained. This was exactly what happened in the experiment regardless of conditions. The episode boundary results are shown in Tables 1 and 2, where data are calculated as *Hits* and *Misses*. *Hits* are NPs used at an episode boundary plus pronominals used within an episode; *Misses* are NPs used within an episode plus pronominals used at a boundary.

Anaphora	At an episode boundary		Within an episode		Proportion of of Hits (%)
	NP	Pronominal	NP	Pronominal	
Even	75	0	139	353	75.49
Odd	76	3	143	294	72.71
TOTAL	151	3	282	647	74.10 (Average)

Table 1: Episode Boundary Results in the Recall Task

Anaphora	At an episode boundary		Within an episode		Proportion of of Hits (%)
	NP	Pronominal	NP	Pronominal	
Even	210	30	48	371	88.16
Odd	232	31	75	340	84.37
TOTAL	442	61	123	711	86.27 (Average)

Table 2. Episode Boundary Results in the On-line Task

The hit rates of the two groups in each task are very similar (about 74% in the recall task and 86% in the on-line task). There is no statistically significant difference found within and across conditions. The results demonstrate that subjects managed reference in discourse production following a general pattern. Their choice of anaphors reflected their discourse organization in the oral and written production task, which was partially controlled by their cognitive activities of memory and attention.

4.3. Counter-examples?

On the other hand, the experimental results reveal that overall about 19% of tokens (26% in the recall task and 14% in the on-line task) seem to run counter to the boundary theory, i.e., NPs used within the episode and pronominals used at the boundary. These counter-examples can also be accounted for by the present hypothesis, which is reported subsequently in this section.

At the boundary: Inter-episode pronominals. Let us first examine the recall task (see Table 1). The inter-episode pronominals are very few (three cases, about 1% of all misses). In the on-line task (see Table 2), however, the inter-episode pronominals was about 33% (61 out of 184) of all misses . There are several possible explanations to account for the occurrence of these pronouns at the boundary.

First, some subjects appeared to be more sensitive to original boundaries than to imposed boundaries. They always marked an original boundary with NPs, but failed to mark the imposed ones from time to time. They tended to keep the central character in focus and pronominalize them until an original boundary was reached. This trend accounted for 52% (32 out of 61) of inter-episode pronominal misses in the on-line task.

Second, about half of the subjects responded to both original and imposed boundaries for the first half of their descriptive task, marking both types of boundaries with NPs, but they seemed to overcome the imposed boundary gradually. By the time the last original episode was reached, the major character had been well established and many subjects overrode the imposed boundaries, using pronominals to maintain reference through to the end. Such uses of pronominals account for about 30% (18 out of 61) of inter-episode pronominal misses. On the other hand, it is interesting to see that though the central character was maintained with pronouns within the last original episode, non-central characters were almost always referred to by NPs regardless of the gender of the central and non-central characters.

Third, the other 18% (11 out of 61) of inter-episode pronouns all came from one subject who recalled the three episodes as if there were a single one. He did not mark any of the imposed and original boundaries except the first one, where they introduced the participants of the story with NPs. The reason these subjects failed to recognize episode boundaries is not clear at the moment. An explanation may be sought in the realm of individual differences in language/task abilities.

Within the episode: Intra-episode NPs. Intra-episode NPs accounted for 17% of all tokens (405 out of 2420) produced by the subjects in both tasks: 26% (282 out of 1083) in the recall task and 9% (123 out of 1337) in the on-line task. Some non-*ad-hoc* explanations can account for these intra-episode misses, apart from cases of ambiguity resolution.

First, as is evident from the discussion of "centrality," the protagonist of the story tends to be kept in focus and pronominalized within episodes. In contrast, non-central characters are frequently nominalized, even when pronoun gender could distinguish between the central and non-central referents. This is illustrated in the example taken from a subject's written recall data.

1)* The child is walking on the street. Just as (he) goes around the corner, (he) sees *a woman* with two bags of groceries in her hands. He steps forward and asks the *woman* if he could help. *The woman* is happy to give him one of the bags. He carries the bag and follows (her). Something in the bag is moving all the time. He is very curious. As soon as *the woman* turns the corner and can't see him, he opens the bag. Out jumps a big lobster and scratches his face. He ties the bag up and quickly catch up with *the woman*.

Here, lexical and zero pronouns were consistently preferred for the central character, with full NPs used for the non-central character even if gender could come into play. The differential use of anaphors between the central and non-central characters thus resulted in more NPs than expected (34% of all intra-episode NPs, i.e., 137 out of 405 NPs used within episodes).

Another phenomenon observed was the fact that more NPs were used within the first episode (in which Alex appears with another child) than within the other two. There are two possible reasons for this trend: 1) at the beginning of the recall task, subjects usually established and identified the participants with more NPs than expected, and 2) in the first episode, both participants appeared in each of the eight pictures and both took part in the activities together; subjects thus tended to weigh both characters equally for centrality. The following is an excerpt taken from a subject in the written recall condition.

2) This appears to be three short stories. In the first story, *a little boy and a little girl* are playing tennis in the backyard. *The girl* hits the ball first towards *the boy* , *the boy* gets it and hits it back toward *the girl*, ...

Even the two characters are of different gender, the subject chose to use full NPs to refer to each child throughout the retelling of the first episode. The first episode accounted for 28% (i.e., 114 out of 405) of all intra-episode NPs.

The third factor to emerge was that in the recall task, the episodes are relatively longer and more complex than the imposed episodes in the on-line task, and speakers were more often obliged to mark minor thematic discontinuity occurred within the episodes, e.g., changes of scenes, changes of participants, changes of perspectives or point of views within each episode. Subjects tended to use NPs to signal these changes, i.e., to treat them as indicating sub-episodes in the story structure. For example, a subject in the oral recall task produced the following excerpt.

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* Due to limited space, the examples used in the paper are all rendered in English translation, with the original anaphors (i.e., NPs, lexical pronouns, and zero anaphora) intact.

3) The third story is about the same boy. At the beginning, he is standing on (..) on a chair, holding a fly-swatter, about to hit a fly. The fly flies toward a chair (um..) a sofa by the chair. He waves the fly-swatter and aims at the sofa. But he misses the fly, and (..) and hits a pile of newspaper on the sofa instead. / Up sits a man suddenly from under the newspaper, (uh..) perhaps his father. Just as the man sits up, the newspaper is falling on the floor. *The boy* doesn't pay any attention (to the man), (he) rummages about among the newspaper on the floor, trying to find the fly. He then throws the newspaper all over the place, ...

In this episode, when *Alex* hits the newspaper, something surprising changes the perspective of the story. This signals a sub-boundary or thematic discontinuity (as is indicated by a slash in the above recall data). At the beginning of this sub-unit, not only the new character is introduced by an NP, the re-introduction of the old character is also done by an NP. This type of intra-episode NPs accounted for another 33% of all NP misses (93 out of 282) in the recall task.

Finally, in the on-line task, about 29% (i.e., 36 out of 123) of all intra-episode NPs were produced by the three subjects, who viewed and described the dual picture frame as if the two were presented individually. In other words, they overtly mentioned that they treated the single frame as two separate pictures during their production task, with phrases like "the picture on the left, ... the picture on the right", "the next picture, ... the next picture", "the first picture, ... the second picture", etc. These subjects used NPs to reinstate a referent following their mention of the second picture in the frame.

All three subjects performed consistently throughout the narrative tasks, reinstating a referent between the two pictures as if there were a minor boundary there. Tomlin (1987) observes similar behavior in his experimental study and finds that some subjects overtly treated the dual slide presentation conditions as though the slides were presented singly throughout the task.

The remaining intra-episode NPs may be attributed to idiosyncrasy. The non-central characters were normally referenced by NPs within the episode. However, some subjects used NPs and pronominals alternatively to disambiguate referents when the central character was of the same gender as the non-central referents. This usage, however, amounts only to 6% of all NP misses (i.e., 25 out of 405 intra-episode NPs).

5. Written narratives

While Section 4 focuses on the distribution of anaphora in both spoken and written narrative samples elicited in the experimental condition, this section will examine written Chinese texts and explore the basic pattern of anaphora in popular Chinese novels/narratives. We argue on the one hand, that the general principle of anaphoric patterning proposed in the present study holds for both written and spoken Chinese narratives, and on the other hand, that some differences exist between speakers and writers in their use of anaphora because of some distinct characteristics of the two modalities.

The differences between spoken and written discourse have been explored since 1960s (Chafe, 1982; Havelock, 1963, 1971; Ong, 1977; Tannen, 1982, 1984; *inter alia*). Some studies have focused on particular differences or sets of related differences, and argued that the two modalities differ from each other in more ways than just the medium in which they are conveyed. Others have held that the differences between speaking and writing can be overridden when the context is appropriate. There are some styles of speaking which makes uses of features associated with writing, and some styles of writing which are more like speech. Beaman (1984), for example, finds that the spoken narratives are just as complex as the written ones: subordinate clauses frequently occur in spoken narratives as well, contrary to the findings of the previous studies, though they are different types and used for different discourse purposes.

In this study, we consider the alleged structural characteristics of spoken and written discourse to be best represented by a continuum. Spontaneous conversation and formal academic prose would set up two poles on the continuum, and other styles of spoken and written discourse may be posited on various points of the continuum, closer or farther away from the poles. Spoken and written narratives, for example, would be close to each other on the continuum, as Tannen (1984) claims: "all narratives, spoken or written, is modelled on the oral story-telling genre" (p. 39) because they depend for their effect on interpersonal involvement between the writer or the character and the reader. The similar story-telling style, and hence the similar structural characteristics of written and spoken narratives would also reveal a similar pattern of anaphoric distribution between the two modalities. The experimental study discussed in the previous section has given evidence to the prediction. The naturally occurring (as versus experimentally elicited) written narratives, on the other hand, would yield the same basic pattern of anaphora since writers organize the discourse, empathize with their audience, utilize pragmatic and contextual information in a similar way as do speakers in their narrative production.

5.1. The hierarchical structure of written narratives

The present study argues that writers' hierarchical organization of written narratives, like spoken ones, governs their use of anaphora to a large extent. The basic assumption underlying structural analysis of discourse is that speakers/ writers try to produce stories and conversations as separate but interrelated structural units, and hearers/readers also try to represent incoming information in a group of hierarchically organized units.

The major difference between spoken and written narratives in this study is that the discourse organization in narrative production is a speaker-and-hearer oriented process, but the discourse organization in written narratives is mainly reader-oriented. This results from different cognitive demands imposed upon speakers and writers. As discussed earlier in the paper, the hierarchical organization of discourse is a manifestation of the limited capacity of human cognitive resources: the spoken units, usually simple and short, are limited by short-term memory constraints, and also by speakers' empathy with hearers' cognitive capacity limitations. Writers, on the other hand, are relatively freed from cognitive constraints (as far as the final written product is concerned). Their production processes would be little affected by discourse organization from their own point of view. Nevertheless, writers write for an audience. They would also try to organize the overall discourse into sizable, comprehensible units of different levels because they know intuitively that language so packaged will be easier to process for their readers, who are more constrained than themselves by cognitive resources and have to process incoming information without a specific discourse plan. To ensure a successful delivery of what they write, writers try to help their readers build a discourse representation congruent with their own by forming hierarchical structural units along the linear path of discourse production. While lacking the opportunity for a direct interchange, writers employ various signaling devices to separate and link structural units. The alternative use of NPs and pronominals is one of the signaling devices writers employ to cue comprehenders where and when a new unit starts.

Previous work has been done on the structural analysis of written story or narratives. Among numerous theories dealing with discourse representation and story comprehension, the theory of story grammar or story schema is most influential (Brown & Yule, 1986; Mandler & Johnson, 1977; Rumelhart, 1977; Thorndyke, 1977). A story grammar generally consists of a set of rules that describe how a story can be chunked into smaller units such as setting, episode, event, action, goal, consequence, etc., and how these units are related to one another. The approach of story grammars helps provide ways of representing knowledge stored in memory and how it relates to discourse understanding. However, such a story grammar appears to be appropriate only for short, simple and specially constructed texts. In analyzing naturally occurring narratives, the problems of the story grammar (see especially Thorndyke, 1977, p. 79) become apparent: 1) the lower level components such as subgoal, event, attempt, etc. are so loosely defined that identifications of such categories in long, complex, natural narratives are extremely difficult; 2) it is not at all clear how recursive units such as episode and event differ from or relate to one another, and how they relate to the overall structure of the narrative; 3) the set of rules defined in the story grammar are either too restrictive or too general to account for narrative units of different types.

The present study proposes, in accord with the hypothesis proposed in Section 3, that both written and spoken discourses are hierarchically organized into sequences of episodes. The general difference found in this study between the two modalities, however, is that episodes in the latter are simple, short, and similar in length and content, whereas episodes in the former are of varying length, complex, and have more layers of recursive units. Specifically, four levels of units are identified in written narratives: the overall discourse, macro-units (episodes), micro-units (subunits), and sentences/clauses, ranging from the highest to the lowest. These lower-level units are related to one another to maintain local thematic continuity, while they contribute to higher level theme to manage the global coherence of the discourse. Of these structural units, episodes are regarded as the core unit of discourse because they pertain both to global structure of discourse and to topically coherent parts of discourse. Moreover, as illustrated in our experimental study, episodic organization in discourse processing has psychological content and is crucial to anaphoric patterning in written discourse.

5.2. An analysis of written texts

According to the present hypothesis, NPs would be expected to be used at episode boundaries to mark the beginning of a new structural unit, and pronominals are used within episodes to maintain thematic coherence of the unit. For our text analysis, episodes are first identified in written texts, and then the distribution of anaphora is examined to see if the written narratives used for the present study exhibit the pattern of anaphora predicted by our hypothesis.

As defined in Section 3, an episode is recursive in nature and subsumed under a macropropositions. Since each episode is subsumed by a different macroproposition, topic changes would be expected to take place at the beginning of a new episode. Writers often use subtitles, chapter or section headings, or even blank lines to separate episodes and divide boundaries. The beginning of an episode is sometimes also cued by time or place phrases such as *Friday, March 20; Three days after; Outside the restaurant; In the hospital,* etc. Writers use these cues to signal the advent of a new episode, and readers depend largely on these cues to build separate substructures to represent episodes during comprehension. Moreover, NPs (more coding materials) would occur at the beginning of an episode to facilitate readers' construction of the new substructure since reference would be less accessible to them across episode boundaries.

In the present analysis, episodes are identified roughly corresponding to chapters, sections, paragraphs in the written narratives, and episode boundaries are usually accompanied by chapter headings, sub-headings, blank lines, and adverbial phrases of some kind. NPs would occur in an episode accompanying one or more of the following parameters , which is/are employed to signal transitions between episodes.

1. the first mention of a participant in an episode, and/or changes in
2. time
3. location
4. topic
5. participant

In the remainder of this section, we will analyze one of the chapters randomly chosen from each of the following three contemporary Chinese novels, and illustrate the general pattern of anaphora with examples taken from these written narratives. We will narrow our focus on human referents only, i.e., examine anaphora in its prototypical use--tracking a human participant through a discourse.

1.	The Aged	(Cheng, 1991)
2.	The Years that Slipped By	(Ye, 1982)
3.	The Leaden Wing	(Zhang, 1984)

The chapter from Cheng is composed of 20 episodes (11 pages), the chapter from Ye consists of 27 episodes (18 pages), and the chapter from Zhang contains 25 episodes (13 pages). Generally, the hit rate (i.e., NPs used at the boundary and pronominals used within episode) is very high for all three chapters. They range from 92% to 94%, with an average hit rate of about 93%. Specifically, almost 99% of pronominals are used within episodes to maintain thematic coherence, only 78% of NPs are used at the boundary. Special attention is thus paid to the analysis of the NPs.

First, of the 78% of NPs occurring at the boundary (Hits), 8% are used for the first mentions of participants in an episode. These can either be the first introductions or re-introductions of a referent. The following passage takes the first few clauses from each of the three consecutive episodes in the selected chapter by Zhang (1984). All three episodes focus on a major discourse participant *He Jiabin* and referred to frequently by pronominals within each episode, yet the character is reinstated by an NP at the beginning of each episode.

4) **He Jiabin** looked sternly, even somewhat gloatingly, into the man's fat, greasy face, ...

He Jiabin had many things on (his) mind as he made (his) way to Room 213, ...

He jiabin had just got off work when (he) spotted Wan Qun at the gate, ...

Secondly, about 12% of NPs are used at the beginning of an episode accompanied by adverbial phrases of time. Consider the following passage:

5) In a large office, Zeng Huixin's desk was placed at an inconspicuous corner. She sat at the corner since (she) graduated from university, ...
After a few years, **Zeng Huixin** had become a skillful editor. She still sat at the corner, ...

Third, about 7% of NPs are used to mark thematic discontinuity after changes indicated by adverbial phrases of place. The following example provides an example.

6) She (Xia Zhuyun) was a bit upset, thinking that the hairdressee was over friendly.
Outside the beauty saloon, **Xia Zhuyun** took a glance at her watch. ...

Next, another 16% of NPs are used at the beginning of an episode where a change in topic occurs. Changes in topic are of varying kind such as a shift from the description of one participant to another, a shift from a participant's appearance or personalities to authorial comments, or changes from action sequences to a character's inner thoughts, etc. An example of this kind is given below.

7) She (Ye Zhiqiu) herself couldn't quite figure out why she would do it. It may be because she could never be a mother in her life, (she) would try to seize any opportunity to show her love as a mother like all women in the world.
For a woman, ugliness is certainly a misfortune.
Taking individually, there was nothing wrong with **Ye Zhiqiu**'s features, but these features, viewed as a face, made her one of the few most ugly women.

Finally, about 35% of the NP hits are used for shifts between two participants in a close interaction, especially in a dialogue. Dialogues in written narratives are often explicitly cued (about 70% of time) by the characters' names, although some (about 30% of time) are not cued at all to intensify the effect of making the reader a closer onlooker of the progressing events. The following dialogue provides an example of the former case.

8) **Du Jianchun** asked: "Tell me, how did you come to this remote area?"
"I?" **Ke Bizhou** hesitated, stumbling: "You, you want to know the truth?"
"Of course!" **Du Jianchun** was much surprised: "Who'd like to hear lies?"
Ke Bizhou was somewhat uneasy, he said dryly: "I came here not of my own free will ..."
"What!" **Du Jianchun** cried loud and cut him short. ...

Although the two characters are of different gender, the dialogue is still cued by proper names rather than pronouns.

While inter-episode pronominals are negligible (about 1%), intra-episode NPs accounts for about 22% of all NP tokens. Of these NPs misses , about 8% are NPs used within episodes to disambiguate referents, where two participants of the same gender are involved. However, there still exists a pattern of referential choice between the two characters. Lexical pronouns are generally used to refer to the currently more topical character (from whose point of view the passage is oriented), while NPs are used for the less topical character. For example,

10) **Shi Quanqing** considered He Jiabin stupid. **He** had worked with Jiabin for many years. During all those years, **he** had watched He stumble time and again (politically), **he** had spotted every obstacle in He's way, but **he** had never once alerted He of the danger; **he** couldn't wait to see He fall flat on (his) face.

Another 6% of NPs are used within episodes to mark perspective or point of view changes of the author and/or discourse participants. This is illustrated by the following passage.

11) Her (Zeng Huixin) talent was recognized by the group. Some famous writers' work were put on her desk for translation, and some hard-to-translate phrases and sentences were also sent to her for solution. She was like Cinderella discovered. Even her reticence made her more attractive than ever.

But **Zeng Huixin** was still single, nor had (she) got a boy-friend. She was by nature proud and aloof, ...

Here in this passage, the perspective changes from how the character is evaluated by other people to how the character is by herself. At this transition point, an NP is used to indicate the change.

To summarize, in the written narratives analyzed above, NPs are used at the beginning of an episode (together with other cues) to trigger readers to shift and initiate new substructures so that they can represent each episode in its own substructure, and they are sometimes also used within episodes to mark perspective or point of view changes, or resolve referential ambiguity between discourse participants. Altogether, these usages account for 92% of all NP tokens found in the three chapters selected for the analysis.

6. General Discussion and Conclusion

The present study proposed a model of anaphoric choice in which cognitive constraints, discourse organization, and pragmatic/interpersonal factors interact to control a speaker/writer's referential decision during discourse processing. The model not only illustrates the general rule of anaphoric patterning in narrative production, but also predicts alternative uses of anaphora at specific places.

The findings support the general hypothesis proposed in the present study. First, the experimental results demonstrate that episodic organization of narrative production has psychological content: the story was hierarchically organized and remembered as a series of episodes. The psychological reality of episodes provides a sound foundation for the episode theory explored here. Second, the episodic structure of discourse largely governs a speaker/writer's anaphoric choice. Both the experimental results and the text analysis show that speaker/writers are sensitive to episode boundaries. They use more marking materials (NPs) at episode boundaries where more cognitive resources are demanded, and they use less marking materials (pronominals) within episodes where thematic coherence is maintained. Third, the thematic discontinuity within episodes such as change of perspectives, possible worlds, and ambiguity resolution also demands more coding materials. Besides the general characteristics of anaphoric distribution in both spoken and written narratives, differences also exist between the on-line oral production of stories and written narratives. First, the different cognitive demands imposed on speaking and writing makes a writer's discourse organization (and hence anaphoric choice) even more audience-oriented. While the speakers' use of anaphora was a manifestation of both their own cognitive processes and an assessment of their hearers' current knowledge, the writers' major concern was to help readers build a hierarchical representation of discourse congruent with their own by their patterning of anaphora. Second, the episodic structure in the written narratives was more complex, recursive than that in the oral story-telling, and the writers therefore were more likely to employ NPs to create subboundaries for their readers to facilitate comprehension. Third, while the speakers consistently pronominalized human central characters of the story in the relatively simple oral production task, writers' view of central/topical characters changed from episode to episode. Nevertheless, it was still the currently topical referent who received attention and remained in focus, and was hence more likely to get pronominalized.

The present study gives further evidence that while stories and texts may be presented or produced in a linear fashion, they are nevertheless formulated and processed hierarchically. This hierarchical organization of discourse is constrained in part by the cognitive processes of memory and attention. In this process, the episode serves as a basic unit in production as well as in comprehension. The alternative use of NPs and pronominals is a very important device to represent discourse structure in production and facilitates the restructuring of discourse representation in comprehension. The correlation between discourse organization and anaphoric patterning has provided an informative method of investigating the relationship between language and cognition.

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The Typology of Tone in Tibetan[*]

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1.0. Introduction. The study of tone has figured prominently in Sino-Tibetan linguistics, for a very good reason: the majority of the extant languages in this family[1] make distinctive use of pitch-related phenomena of one type or another. Considerable progress has been made in recent phonological investigations into the tonology of Sinitic languages (e.g. Yip 1980, Yue-Hashimoto 1987, Shih 1986, Bao 1990). Comparable studies on the highly diversified and relatively under-explored Tibeto-Burman languages are however still scanty, with a few outstanding exceptions such as Mazaudon 1977, Michailovsky 1988, and Weidert 1987. The present study intends to contribute to a better understanding of the typology of tone in Tibetan, one of the principal languages of the Tibeto-Burman family.

An overview of the attested types of tonality in modern Tibetan in §1 puts the paper in perspective; the particular tone system of Lhasa, representing a relatively advanced tonogenetic stage, is then briefly described. In §2 Tibetan tonology is explored from the vantage point of autosegmental phonology, a framework which holds special promise in elucidating tone in Tibetan. The particular autosegmental account of tonal phenomena in four Tibetan dialects given in Duanmu 1992 is critically examined in §2.1; a more comprehensive and explanatory reanalysis is offered in §2.2 which diverges from the foregoing with respect to (i) the representation of the underlying tones, (ii) the source of the redundant high tone on non-initial syllables, and (iii) the role of tone-spreading in Tibetan tonology. Next, two issues involved in the proposed analysis are further explored, bearing respectively on the high tone as the 'default' tone in Tibetan (§3.1), and the problem of whether word-level melody is derived from syllable tones through 'tone sandhi' (§3.2). Based on the findings of this paper, a typological distinction is suggested in the concluding section between **template word-tone** languages represented by Tibetan and Dongkou Chinese, and **contoureme word-tone** languages represented by Tamang and New Shanghai Chinese.

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[1] The Sino-Tibetan language family contains at least two subfamilies, Sinitic (Chinese) and Tibeto-Burman. According to the more conservative and increasingly popular view in the field, the Miao-Yao and Tai-Kadai languages are not genetically related to Sino-Tibetan.

1.1. Tonality in Tibetan. Tonality is generally speaking under-developed in Tibetan, as in some other Tibeto-Burman languages.[2] It is generally held that Old Tibetan was not a tone language, in view of the complete absence of tone-marking in the traditional Tibetan script dating from the seventh century, and a fortiori in view of the existence of modern dialects which remain atonal to this day. Modern Tibetan, on the other hand, presents such a variegated scenario of tonal developments that the simple dichotomy of '**tonal**' versus '**atonal**' dialects seems insufficient. It would be more realistic to plot modern Tibetan dialects along a scale of increasing tonality, ranging from completely atonal to relatively highly tonal as exemplified in Table 1 below, based in part on Huang 1993:

Tonality Scale	Description of Each Stage	Representative Dialect Points
Atonal	neither phonemic tone nor redundant 'habitual' tone	Ndzorge; Ngaba
↕	no phonemic tone; redundant 'habitual' tone developed	Labrang; Daofu
	tone phonemic in restricted environments only	Amdo Sherpa; Balti
	tone generally phonemic; tone values unstable in some syllable types	Derge; Yushu
	tone values stable; high redundancy	Lhasa; Gar
Tonal	additional contrast between falling and level contours established	Shigatse; Dzongkha

Table 1: The Tibetan Tonality Continuum

At one end of the above scale are found dialects in which all syllable types carry a high (falling) tone when uttered in isolation, much as in English. This is, of course, the **completely atonal** stage, represented by such Amdo dialects as Ndzorge (mDzod-dge; Sun 1986),[3] Amchog (a-mchog; Wu 1983), and Ngaba (rNga-ba; Huang 1993); old Tibetan, in all likelihood, also belongs to this type. The next stage is marked by the genesis of 'habitual tone' (Hu 1980: 31) or 'natural tone' (Huang 1993), i.e. fixed redundant pitch patterns determined by the voicing state of syllable initials, with voiced initials conditioning low pitch and voiceless ones conditioning high pitch, in such Amdo dialects as Labrang (bLa-brang; Hua 1980:72, Hu 1980:fn. 20) and Daofu (rTa'u; Huang 1993).[4] Tone, however, did not become contrastive until the **emergent-tone** stage where a limited number of tonally distinguished minimal pairs began to enter the scene. Two subtypes exemplifying this stage can be identified; contrastive tones are either restricted to certain syllable types, such as those with nasal initials in the case of Amdo Sherpa (a-mdo Shar-pa; Nagano 1980), or apply only to disyllabic and trisyllabic nouns as is the case in Balti (sBal-ti; Sprigg 1966: 186-9).[5] Yushu (Yus-hru'u), along with such other varieties of Khams Tibetan as Derge (sDe-dge; Qu 1979:121; Huang 1993: 3) and Chamdo (Chab-mdo; Liu 1984), embody the next stage of tone development, with distinctive tones on most syllable types but variable and hence non-distinctive pitch patterns on others (see section below). Then came the stage represented by Lhasa as well as many other varieties of tonal Tibetan, where contrastive tones have permeated to all syllable canons but such tones contain a high degree of redundancy, being multiply realized by such features as phonation type, final glottality, tensity, syllable quantity, as well as pitch. The most advanced tonogenetic stage in Tibetan is reached by such dialects as Shigatse and Dzongkha,[6] where a new distinctive (steep) falling pitch arises in compensation for the apocopated glottal coda in the case of Shigatse (Qu 1981a:186-7; Huang 1993) or sonorant-coda apocopy as well as syllable contraction in the case of Dzongkha (rDzong-skad; Mazaudon and Michailovsky 1988), making it necessary to recognize both a register (high vs. low) and an intersecting contour (falling vs. level) contrast.

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[2] Chinese-like, or **omnisyllabic** (Matisoff 1991:491) tone systems where all syllables normally carry contrastive tone are lacking in many Tibeto-Burman branches, such as Tani, West Himalayish, Bodo-Garo, and Bodic (including Tibetan).

[3] Written Tibetan (hereafter **WT**) forms will be given in Wylie's standard system of transliteration.

[4] Hence the slogan 清 高 濁 低 '**High pitch if voiceless; low pitch if voiced**'. It is often implied that this slogan can be applied to all Amdo dialects (Hu 1980: 31; fn. 20; Hua 1980:72-3), and even to Old Tibetan also (Hu 1980: 31). One of the important contributions of Huang 1993 is to dismiss this misconception by pointing to the existence of both types of Amdo dialects (e.g. Ngaba vs. Daofu). See also §3.1 below.

One of the most important generalizations on Tibetan tone, even in its most advanced state, is that the primary register contrast is realized only on the initial syllable of a phonological word; all other syllables are normally on predictable high register.[7] The drastic reduction of tone in multisyllabic domains results in at most **one contrastive tone per (phonological) word** in Tibetan, regardless of the number of constituent syllables. On account of this fact, there is now growing consensus that what (tonal) Tibetan has is a word-based rather than syllable-based tone system (Sprigg 1954, 1955; Mazaudon 1977; Ossorio 1982:2.5.6; Shih 1986: §4.5).

1.2. Tone in Lhasa Tibetan. Although Lhasa is the best-known variety of modern Tibetan, some areas in Lhasa phonology, in particular its tone system, remain controversial. A number of factors are responsible for this lack of consensus. First, not all sources on alleged 'Lhasa Tibetan' represent genuine samples of the native speech of the Lhasa city. Second, elicitation methods which make no provision for the pronounced stylistic differences in Tibetan may yield controversial results (Sprigg 1992, 1993). Moreover, how one should properly handle multiple phonetic realizations of tone and tonal neutralization in non-initial syllables mentioned above contributes further to divergent interpretations of Lhasa tonology.

To begin with, examine the following table of the citation pitch patterns of Lhasa monosyllables reported in Hu 1980 and Hu et al. 1982, based on an instrumental study of the colloquial-style pronunciation of three native speakers:[8]

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[5] Huang 1993:2 reports a few minimal pairs on **monosyllables** also in her Balti consultant's speech.

[6] Also to be included in this type are such other varieties of Central Tibetan as Langkazi (sNang-dkar-rtse) (Qu 1981a), and Shap (Ossorio 1982).

[7] Except unstressed clitic syllables and a minor case to be discussed in §3.2.2.

[8] Pitch patterns are given in the familiar numerical tone notation (highest pitch level = 5; lowest pitch level =1). See also the instrumental study reported in Kjellin 1977, which yielded comparable results. However, Sprigg 1993 argues against the citation-form approach, warning that literate Tibetans may give **spelling-style pronunciations** when uttering syllables in isolation. However, I have had quite different personal experiences working with my literate Amdo Tibetan consultant, who, keen on the stylistic differences, has no difficulty whatsoever enunciating citation forms in the colloquial-style on demand (see Sun 1986: Chapter 4). It would be only fair to point out that the linguists conducting the experimental study reported in Hu et al. 1982 were also fully aware of stylistic distinctions in Lhasa Tibetan, and explicitly states: 'this experiment was based entirely on the colloquial pronunciation...as natural in fluency and tempo as in normal daily conversation as possible...' (Hu et al. 1982:23, translation mine).

Register	WT Form	Lhasa Form	Pitch Pattern	Gloss
HIGH	bka'	ka^{54}	high (slight) falling	'decree'
	ka-ba	ka:^{55}	high level	'pillar'
	bkag	ka?^{52}	high (steep) falling	'hinder'
	skam	ka:m^{55}	high level	'be dry'
	bskams	kam?^{52}	high (steep) falling	be dry (perfective)'
LOW	sga	ka^{12}	low (slight) rising	'saddle'
	bsgar	ka:^{113}	low level-rising	'fasten'
	'gag	ka?^{132}	low rising-falling	'be clogged'
	gam	ka:m^{113}	low level-rising	'box'
	'gams	kam?^{132}	low rising-falling	'put in mouth (perfective)'

Table 2. Lhasa Monosyllabic Citation Pitches

Several observations can be made about the preceding data:

(1) a. High-register syllables are characterized by a fall in pitch, and low-register syllables by a rise in pitch.
b. On long syllables, pitch movements are flattened.
c. The glottal stop coda -? induces a steep drop in pitch.
d. There is at most a two-way **register contrast**, high versus low, on any of the five rhyme types in Lhasa (-V, -VV, -VP, -VM, and -VMP; where V = vocalic nucleus; P = stop coda, including the glottal stop -?; M = non-checked or sonorant coda).

The six complementarily distributed pitch patterns in Lhasa, therefore, leave much room for different tonemic interpretations,[9] four of which are summarized below (Hu 1980:23-4):

(2) **Four-tone analysis A:**[10] Marks glottal stop; regards syllable quantity as an inherent feature of tone (speaking thus of 'long tones' vs. 'short tones'):

ka^{54} -> ka^{53} 'decree' ka^{12} -> ka^{35} 'saddle'
ka:^{55} -> ka^{55} 'pillar' ka:^{113} -> ka^{15} 'fasten'
ka?^{52} -> ka?^{53} 'hinder' ka?^{132} -> ka?^{35} 'be clogged'
ka:m^{55} -> kam^{55} 'be dry' ka:m^{113} -> kam^{15} 'box'
kam?^{52} -> kam?^{53}'be dry (pf)' kam?^{132} -> kam?^{35} 'put into mouth (pf)'

(3) **Four-tone analysis B:**[11] Represents syllable quantity segmentally (quantity in syllables closed by sonorant codas are not marked); gives falling tones tonemic status (tone marks: -f = high level; -h = high falling; -v = low rising; -w = low rising-falling):

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[9] Thus, the statement that 'Lhasa Tibetan has six citation tones.' (Shih 1986: 19) is valid only at the phonetic level.

[10] This is the system used by Tibetologists affiliated with the Chinese Academy of Social Sciences, such as Hu Tan, Qu Aitang, Zhang Jichuan, and Tang Kerang.

[11] This is the system devised and used by Tibetologists from the Central University of Nationalities in Beijing. Kitamura and Nagano 1990 adopts a similar transcription system for Lhasa Tibetan which, however, is word-based.

ka^{54}	-> gaf	'decree'	ka^{12}	-> gav	'saddle'
ka:^{55}	-> gaaf	'pillar'	ka:^{113}	-> gaav	'fasten'
ka?^{52}	-> gah	'hinder'	ka?^{132}	-> gaw	'be clogged'
ka:m^{55}	-> gamf	'be dry'	ka:m^{113}	-> gamv	'box'
kam?^{52}	-> gamh	'be dry (pf)'	kam?^{132}	-> gamw	'put into mouth (pf)'

(4) **Four-tone analysis C:**[12] Represents length segmentally; gives falling pitch tonemic status. Unlike analysis B, this system recognizes only two register tones on short syllables, but posits an additional falling pitch in combination with the two registers on long syllables,[13] yielding four tones: high-high, low-low, high-falling, and low-falling.

ka^{54}	-> qā	'decree'	ka^{12}	-> qa̲	'saddle'
ka:^{55}	-> qāā	'pillar'	ka:^{113}	-> qa̲a̲	'fasten'
ka?^{52}	-> qāà	'hinder'	ka?^{132}	-> qa̲à	'be clogged'
ka:m^{55}	-> qām	'be dry'	ka:m^{113}	-> qa̲m	'box'
kam?^{52}	-> qām̀	'be dry (pf)'	kam?^{132}	-> qa̲m̀	'put into mouth (pf)'

(5) **Two-tone analysis:**[14] Marks both glottality and quantity segmentally; regards only pitch-registers as proper features of tone.

ka^{54}	-> kā	'decree'	ka^{12}	-> ka̲	'saddle'
ka:^{55}	-> kāā	'pillar'	ka:^{113}	-> ka̲a̲	'fasten'
ka?^{52}	-> kā?	'hinder'	ka?^{132}	-> ka̲?	'be clogged'
ka:m^{55}	-> kām	'be dry'	ka:m^{113}	-> ka̲m	'box'
kam?^{52}	-> kām?	'be dry (pf)'	kam?^{132}	-> ka̲m?	'put into mouth (pf)'

Most phonologically defined words in Lhasa Tibetan are more than one syllable long. They include, in the main, nominal and verbal stems plus their corresponding endings, and disyllabic (and sometimes trisyllabic) compounds. Phonological words are characterized by a number of **internal sandhi** phenomena such as presence of certain medial 'intrusive' consonants,[15] vowel harmony, deaspiration of stop/affricate initials, voicing of second-syllable voiceless sonorant initials, and above all, tonal modulations.[16] Table 3 below lists the six surface pitch patterns pronounced in isolation

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[12] This system, designed by Chang Kun and Betty Shefts Chang (Chang and Shefts 1964; Chang and Chang) and adopted in a number of influential teaching materials on Lhasa Tibetan by John Goldstein, is by far the best-known system in use outside of China.

[13] Syllables with the glottal stop coda are represented in this system as long syllables. This has to do with the fact that **-V?** is often realized as **-VV** in the first syllable in multisyllabic words in Lhasa (Qu 1981a:191-2). Moreover, according to Hu 1980: fn. 13, some Lhasa speakers pronounce all glottal-coda syllables as long open ones (Rinzin Wangpo, R. K. Sprigg's main Lhasa Tibetan consultant, is one such speaker).

[14] This is the two-tone analysis of Lhasa Tibetan advocated in this paper.

[15] These are the remnants of Old Tibetan consonant clusters, e.g. in the Lhasa word **me̲ntā** 'firearm' (< **me̲** 'fire' + **ta̲** 'arrow'), the medial nasal **-n-** is a reflex of the nasal preradical *m-* of the second morpheme **ta̲** (< WT *mda'*) See Ossorio 1982 5.1.4; Sun 1986: 4.4 for more details.

[16] These are the phonetic exponents of the **interverbal junction** (i.e. close juncture) prosody (Sprigg 1954: 146-9).. For a different set of sandhi devices in the atonal Ndzorge **Shæme Xəra** dialect, see Sun 1986: Chapters 3 & 4.

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and the respective modulated pitch shapes when these occur in the first, medial, and final syllables in multisyllabic words[17] (based on Hu 1980):

Monosyllabic Tone Value	**Tone Value in Multisyllabic Words**		
	First Syllable	Medial Syllable (if any)	Final Syllable
54	55	55	54
55	55	55	55
52	55	55	52
12	11	55	54
113	11	55	55
132	11	55	52

Table 3. Lhasa Pitch Patterns in Multisyllabic Words

Again, several observations can be made:

(6) a. In the first syllable, the characteristic fall and rise in pitch associated respectively with high- and low-register syllables are not observed; the attested pitches are level in both cases (high level ^{55} and low level ^{11}).

b. In the medial syllable, if any, the pitch is always high level^{55}.

c. In the final syllable, only high-register pitch patterns are found.

Thus, multisyllabic words in Lhasa, as in most other tonal dialects, carry a two-way contrast only in the first syllable, all subsequent syllables are predictably high-pitched. Obviously, the tone system at work in Tibetan is a highly restricted one, differing in fundamental ways from a typical Sinitic system (see §4 below).

2.0. The Autosegmental Approach to Tibetan Tonology. Autosegmental phonology, an offshoot of non-linear phonology developed by John Goldsmith and others (Goldsmith 1979, 1990; Yip 1980), is the descriptive model adopted in a recent article by Duanmu San on the analysis of tone in modern Tibetan (Duanmu 1992),[18] where it is contended that an autosegmental approach to Tibetan tone can bring out insights missed by the traditional, syllable-based approach.

Indeed, autosegmental phonology seems a particularly fitting framework for the insightful treatment of tone in Tibetan, given the characteristics of Tibetan tone mentioned above. First, it is the contrast in (high vs. low) **pitch register** that is fundamental in Tibetan, whereas pitch contours are often redundantly associated with suprasegmental parameters Thus, a high tone in Lhasa falls slightly, stays level, or falls steeply depending on whether the tone-bearing syllable is short, long, or checked/glottalized. Dialects also differ significantly with respect to how surface pitch contours are realized (see Table 5. below). As has been amply demonstrated in previous work on African tone

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[17] Multisyllabic words in Tibetan are at most three syllables long. Quadrasyllabic expressions in Tibetan behave tonally as combinations of two disyllabic words (Qu 1981b:21). In the Lhasa system, the pitch of a long second syllable is rising rather than level if the first syllable contains a low tone in multisyllabic words. Moreover, unstressed syllables also behave differently (see §2.2 below).

[18] Subsequent reference to this source will be by data-set number and page number only.

languages, the autosegmental approach is a particularly fitting framework for handling register-tone systems. Moreover, autosegmental phonology allows both general and localized tone processes in Tibetan to be characterized in a revealing way. Consider for example the pervasive reduction of tone in Tibetan non-initial syllables, resulting in highly restricted tone patterns in multisyllabic words. Instead of exhaustively listing individual pairs of citation tones and the respective 'sandhi tones' as is done in the traditional approach, an autosegmental analysis can reflect the simplicity of the underlying tonal neutralization process by formulating a simple unitary tone rule which nullifies the underlying tones on non-initial syllables, leaving only the initial tone to bear the tonal contrast of the entire word (see §2.1 and §2.2 below).

Concurring with Duanmu's general points on the usefulness of the autosegmental model in representing tonal oppositions and processes in Tibetan, we nevertheless hold rather different views regarding what constitutes adequate autosegmental treatments of Tibetan tone, for reasons we shall see below.

2.1. Duanmu's Analysis. In Duanmu 1992, tonal variations in monosyllabic and multisyllabic expressions in four Tibetan dialects, Lhasa, Zedang (rTsed-thang), Gar (sGar) and Gaize (sGer-rtse),[19] are examined in order to show that tone in Tibetan behaves in ways similar to tone in other parts of the world, such as Africa and east China (Wu dialects of Sinitic), in that (i) contour tones are made of level tones, and (ii) tones lie on an independent tier and may spread across segments.

For Duanmu, all four varieties of Tibetan have the same system of underlying syllable-tones: a high (H) and a rise (LH), differing from each other mainly in their tone-mapping rules. The set of tone rules proposed by Duanmu for Lhasa are repeated as (7) below:

(7) a. Delete tones from non-initial syllables.
b. Associate tone to syllables one-to-one, left to right.
c. If there are more syllables, spread the last tone to excess syllables.
d. If there are more tones, link excess tones to the last syllable.
e. If a L precedes a final long syllable with a H, spread L to the latter.

The relations between the underlying tones and their realizations in different syllable types are as in Table 4 below (adapted from Duanmu op. cit.: 75):

	Underlying Tone		Syllable Type
	H	LH	
Realization	54	12	-V (open syllable)
	55	113	-VV/ -VM (long syllables, including long open syllables and closed unchecked syllables
	52	132	-VP (checked syllables)[20]

Table 4. Lhasa Surface Pitch Patterns and Underlying Tones in Duanmu's Analysis

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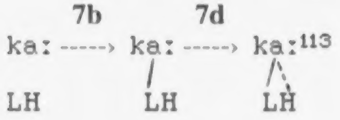
[19] Lhasa, Zedang, and Gar are Central (dBus-gTsang) dialects, whereas Gaize belongs to the heterogeneous Khams dialect group, according to Qu and Tan 1983.

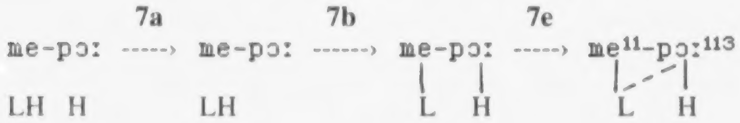
[20] Not mentioned is the rhyme type -VMʔ, which, in contrast with -VM, behaves tonally as a short checked syllable.

Consider now the sample derivations of the monosyllable **kaː^{113}** 'fasten; install', and the disyllabic compound **me^{11}pɔː^{113}** 'coal-pan' (composed of **me^{12}** 'fire' and **pʰɔː^{113}** 'bowl'):

(8)

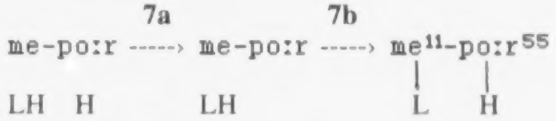


(9)



Only two aspects of the multisyllabic tone patterns in the three non-Lhasa tone systems, where they diverge from the Lhasa system, are treated by Duanmu. For one thing, Gar and Gaize, unlike Lhasa, lack the tone-spread rule 7e. Contrast (9) above with (10) below, showing the derivation of the compound for 'coal-pan' in Gar:

(10)

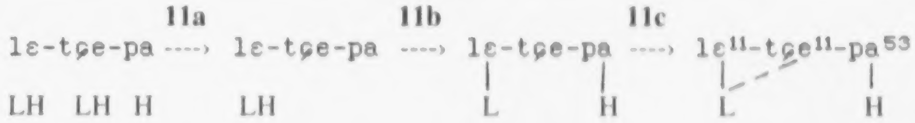


The second divergent pattern pertains to trisyllabic compounds in Zedang, where the medial tone, rather than being invariably high-toned as in the other dialects, becomes low if the tone of the first syllable is low. This fundamentally assimilatory process is accounted for by appealing to 'edge-in association', expressed as (b) and (c) of the following Zedang tone rules (p. 83):

(11) a. Delete tones from non-initial syllables.
b. Associate the first tone to the first syllable, and the last tone to the last syllable.
c. If there are free tone in between, spread the first tone to them.

Consider the sample derivation for the compound word for 'cadre' below:

(12)



Ingenious as it may seem, Duanmu's analysis of Tibetan tone falls short of being completely satisfactory. On the one hand, what he advocates for Tibetan is a typologically odd system of underlying tones. Given a two-tone system, it is in principle far more natural to have a simple contrast of high vs. low **registers** than a mixed system of level (H) vs. contour (LH) tones, especially in view of the high variability of pitch contours in tonal Tibetan (Sprigg 1993).[21]

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[21] R. K. Sprigg has repeatedly underscored the fact that Tibetan is a register tone system (see for example Sprigg 1990, 1993). Y. R. Chao also recognizes the two Lhasa tonemes as a basic contrast of high vs. low registers, even though he describes their actual citation values as contour tones (respectively high falling ^{53} and low rise-fall ^{131}) (Chao and Yu 1930:9-12). Other Tibeto-Burman languages with similar two-term register tone systems include PaTani (Saxena 1991), Apatani (Weidert 1987: §6.2) and Manipuri (= Meithei; Chelliah 1991).

We noted earlier that in Lhasa (as well as in many other Central Tibetan dialects), high-register syllables are characterized by a fall in pitch, and low-register syllables by a rise in pitch when uttered in isolation. To accord the pitch rise associated with the low tone underlying status, i.e. LH, while relegating the pitch fall associated with the high tone to 'domain-final intonation', representing the later simply as H, seems rather contrived. The correlation between underlying and surface tones would be much more consistent if **both** the pitch fall (with high-register syllables) **and** the pitch rise (with low-register syllables) are regarded as low-level domain-final phenomena, to be dealt with uniformly by language-specific allotonic rules.

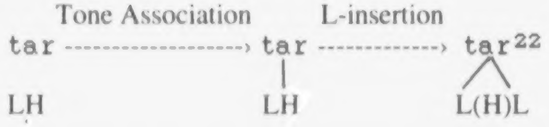
In fact, this heterogeneous system of underlying tones is extended by Duanmu not only to Zedang and Gar whose surface tonal phonetics is akin to that of Lhasa, but even to Gaize, which has entirely disparate monosyllabic pitch patterns, as shown below:

H	**LH**	**Syllable Type**
53	31	short
51	22	long

Table 5. Gaize Underlying and Surface Tones in Duanmu's Analysis

In Table 5, the high tone on long syllables is a steep falling tone while the low tones do not rise at all in Gaize, contrary to what the proposed underlying tones H and LH indicate. The obvious mismatch between the underlying and surface tones is dealt with by Duanmu by adding a patch-up rule which tags a L to the right of monosyllables ((38d), p. 81), and, in the case of the low-toned syllables, stipulating further that a H tone sandwiched between two L's may 'stay unlinked'; for instance ((39 b.), p. 81):

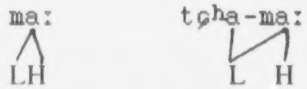
(13)



It is evident now that Duanmu pays a high cost in descriptive naturalness and plausibility for treating the Tibetan low-register tone as underlyingly LH. This decision is presumably motivated by an important fact related to tonal phonotactics in Tibetan, which, we recall, is that in non-initial syllables of multisyllabic words the tonal contrast is neutralized to a relatively high-pitch tone in all tonal dialects of Tibetan so far recorded. Under Duanmu's analysis, this state of affairs is accounted for by attributing the non-initial high tone to a H emanated from **both** underlying tones on the initial syllable through left-to-right tone-spreading.

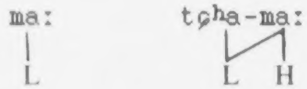
There are, however, indications that this conception of the origin of the (redundant) non-initial high tone is misguided. First, the requirement that all underlying tones have a H on the right edge demands in effect that **all** varieties of tonal Tibetan have only two kinds of underlying tones, high level (H) and rising (LH). This stipulation flies in the face of such surface pitch patterns as falling (HL) in the high-register as well as level (L) and falling (HL) in the low register actually attested in many modern dialects (Qu 1988: 327). We have seen in the above how much Procrustean stretching has to be exercised in order to fit the data into Duanmu's theory of underlying tones in the case of Gaize; even more ad-hoc manipulation will have to be performed if other dialects are taken into consideration. Second, treating the low-register tone as LH misses the underlying unity of certain tonal processes. Consider again the pitch patterns me^{11}-pɔː^{113} 'coal-pan' in Lhasa and lɛ^{11}-tɕe^{11}-pa^{53} 'cadre' in Zedang, where the second syllables become respectively rising and low level when abutting a low-register tone in the first syllable. Intuitively, what is clearly at work here is the low pitch of the initial syllable permeating, to different degrees, the neighboring syllable. However, the relatedness between these two cases of **low-tone assimilation** is obscured in Duanmu's analysis, which handles them by distinct tone-association rules. On the other hand, by representing the low-register tone simply as L directly captures the underlying uniformity of these two tonal processes (see below). Furthermore, the representation of the low tone as underlyingly LH yields predicted tonal outputs directly contradicted by actual tone patterns. Observe, for example, the following representations of the morpheme ma̱a̱ 'butter < WT *mar* ' both in isolation and in the compound tɕʰa̱-māā 'tea and butter < WT *ja-mar* ' under Duanmu's analysis:

(14)



Since both occurrences of ma̱a̱ 'butter' bear the same LH tones, the prediction is that their surface tones should also be identical. On the contrary, the instrumental research conducted by Hu et al. (1982: 34) reveals that the morpheme for 'butter' has a higher general pitch (^{24}) in the compound 'tea and butter' than its citation pitch (^{113}). If, on the other hand, the underlying citation tone of 'butter' is posited simply as L, then the two occurrences of 'butter' will have distinct tone structures, L vs. LH:

(15)



Crucially, the presence of a H tone in the word-internal occurrence of the morpheme for 'butter' (on the provenance of this H tone, see below) provides a natural explanation why the pitch gets heightened in this particular environment. This provides further, and in our opinion clinching, evidence that the underlying low-register tone in Tibetan should be no more complex than L, and that the high pitch of non-initial syllables in Tibetan is by no means inherited from the initial syllable.

2.2. Alternative Analysis. From the above arguments, and also in compliance with the insights distilled from a long tradition of Tibetan tonal research (Jäschke 1881: xiii-xxi, Chao and Yu 1930, Miller 1955, Mazaudon: 1977: §3.1; Sprigg 1954 through 1993), it seems clear that the underlying tonal representations in Tibetan should be none other than H(igh) vs. L(ow) registers.[22] The observed pitch contours which appear on the last syllable of phonological words, on the other hand, differ from dialect to dialect and may vary from one phonological or sociolinguistic context to another even within the same dialect (Sprigg 1993). Such largely predictable domain-final contours, rather than being represented underlyingly, should be generated by **dialect-specific** detail rules, as argued above.[23]

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[22] At least for those dialects (e.g. Lhasa) where the (steep) falling pitch can be consistently derived from the presence of the glottal-stop coda by an automatic allotonic process. It is only in such dialects as Shigatse (Qu 1981a, 1988, Huang 1993) and Shap Tsang (Ossorio 1982) where the loss of the glottal stop makes the steep pitch fall no longer predictable from the segmental structure, will it be justified to recognize both a register (high vs. low) and a contour (level vs. falling) distinction (for an autosegmental representation of tone in such dialects, see §4 below).

Also at variance with Duanmu's analysis is our account of the redundant high register on non-initial syllables in Tibetan multisyllablic words. We contend, following a well-known principle in markedness theory, that the high register is the unmarked register in Tibetan since this is the value found **in contexts of neutralization** (Greenberg 1966: 13-24). The high tone in Tibetan non-initial syllables, in other words, results not from assimilation to a H in the initial syllable but rather from phonological neutralization reducing the original tonal contrast to a redundant high register. In our analysis, this generalization is conveyed by a rule which replaces the original tones on non-initial tone-bearing syllables with the **default** register value H.[24] The tone rules for Lhasa Tibetan can now be given as (16) below:

(16) a. **Tone Association (TA)**: equivalent to Duanmu's tone rules (19b), (19c), and (19d).
b. **Low Tone Assimilation (LTA)**: If the tone of the initial syllable is L and the second syllable is long, spread L to the latter.
c. **Default Tone Replacement (DTR)**: Replace underlying tones on non-initial **tone-bearing** syllables with the default high tone (symbolized herein as boldfaced **H**).

At this juncture, some remarks are in order concerning two areas of Lhasa tonology not touched upon in Duanmu 1992. First, many grammatical elements such as case markers, verbal endings, and sentence-final illocutionary particles behave as unstressed **toneless** enclitics in Tibetan (Qu 1981b: 20; Wang 1984). Such enclitics, for example the perfective aspect marker **-pə-**, are **extrametrical** in that the host syllables they are attached to are characterized by domain-final contours, as if the enclitics do not count as part of the tonal domain (Qu 1981b: 20; Mazaudon 1977:82-3; Durand 1990:211-5). Furthermore, DTR also applies vacuously to toneless syllables which do not possess corresponding slots on the tone tier to serve as landing sites of the default high tone.[25] Toneless syllables are to be distinguished from cases like the imperfective aspect marker **-kī-** in Lhasa which, being bound morphemes, never occur by themselves in natural speech and therefore are lexically unspecified for tone. Unlike toneless syllables, however, such bound forms do hold places on the tone tier (hence the slot-holding underline __ below) and are entitled to receive the default tone.

In the sample derivations of (17) below, contrast the underlying tonal representations of the two phonological words *ɕī-kī-re* 'will die' and *ɕī-pə-re* 'died', consisting of the verb root *ɕī* 'to die', the enclitics =*-pə-* and =*-kī-* and the (optionally) toneless auxiliary *re* (< WT *red* 'copula'):[26]

---

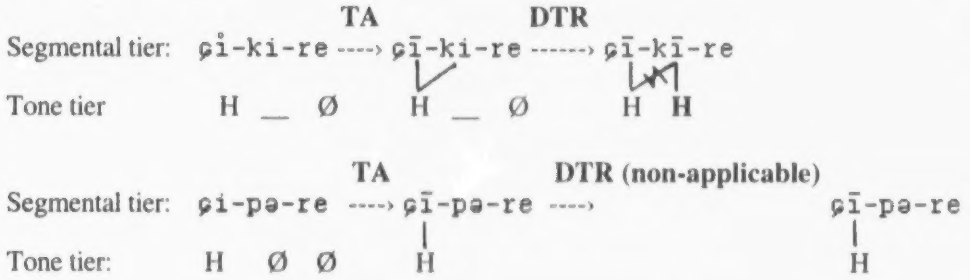
[23] Thus there should be distinct allotonic rules for Lhasa and Gaize Tibetan to the effect that, for instance, the underlying low tone tends to be realized in short open syllables with a slight **rising** pitch in the former dialect but with a slight **falling** pitch in the latter.

[24] In at least one other Tibeto-Burman language, Meithei, the high tone is also analyzed as the default tone; see Chelliah 1991. Yip 1993: 257 attributes the default high register on the second syllable in Tibetan compounds rather to the deletion of the laryngeal node (and also the subordinate feature [murmur]) on that syllable.

[25] There are as yet no experimental studies devoted specifically to the surface pitch shapes of toneless syllables. Wang 1985: 89 observes that such syllables are usually spoken at an indistinct mid pitch, but when the preceding domain-final contour is falling, the fall is normally spread to the toneless syllable. For example, the surface pitch contour of the word **tɕe̱-lə** 'then; afterwards' (< WT *rjes-la*) is **tɕe^{13}-lə^{2}**.

[26] Although this copula is normally weakened to a toneless clitic, it can also be pronounced as a low-toned full syllable **rɛ̱ʔ** in deliberate speech (Wang 1985: 86-8).

(17)

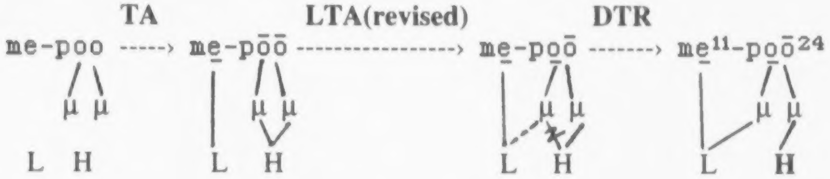

TA
DTR
Segmental tier: ɕi-ki-re ----> ɕī-ki-re ------> ɕī-kī-re
Tone tier H _ Ø H _ Ø H H
TA
DTR (non-applicable)
Segmental tier: ɕi-pə-re ----> ɕī-pə-re ----> ɕī-pə-re
Tone tier: H Ø Ø H H

We turn now to the input conditions of Low Tone Assimilation above, which require that the second syllable be long, consisting either of an open syllable with a geminate vowel or diphthong or a syllable closed by a sonorant coda. Experimental studies on Lhasa Tibetan have shown that the duration of such syllables is roughly double that of short syllables (Hu et al. 1982), and in the case of closed unchecked (i.e. sonorant-coda) syllables, the length of the coda equals that of the preceding nuclear vowel (Tan and Jiang 1991). Evidently then, long syllables in Tibetan are **bimoraic** where the second vowel in the case of long open syllables or the sonorant coda in the case of closed syllables occupies a separate mora.[27] Also, the LTA rule in Lhasa and elsewhere[28] must be made sensitive to moraic structure, otherwise its restriction to long (bimoraic) syllables would be unexplained. This furnishes direct evidence that the tone-bearing unit in Tibetan is the mora rather than the rhyme or the syllable.[29] Hence, LTA can be reformulated as (18):

(18) **LTA (revised)**: If the tone of the initial syllable is L and the second syllable is bimoraic, spread L to the latter, causing the originally associated tone on the first mora to delink.

Consider now the revised derivation of the same compound me^{11}pɔː^{24} (in our transcription **me̱-pōō**) 'coal-pan':

(19)


TA
LTA(revised)
DTR
me-poo -----> me̱-pōō -----------------> me̱-poō -------> me̱¹¹-poō²⁴
μ μ
μ μ
μ μ
μ μ
L H
L H
L H
L H

Another case of low tone spreading is presented by Zedang Tibetan where the medial syllable in trisyllabic compounds, rather than bearing the default high tone as in the other dialects, becomes low-toned if the tone of the initial syllable is low. As argued above, this particular type of low-tone spreading obviously involves the same underlying process as LTA and therefore should not be treated by distinct mapping mechanisms. Instead, we propose for Zedang Tibetan a dialect-specific tone rule which simply spreads an initial low tone to the word-medial syllable. In contrast with LTA where the spreading L affects only a neighboring mora, this rule is more thoroughgoing in causing the entire affected syllable to be assimilated to L. The tone rules for Zedang Tibetan (which also has LTA) are as follows:

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[27] Checked syllables in Lhasa Tibetan, including those with a nasal coda followed by the glottal stop -ʔ, are shorter in duration even than short open syllables (Tan and Jiang 1991). Such syllables are clearly monomoraic.

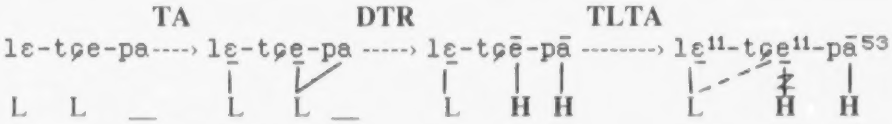
[28] Other dialects that have similar low-tone spreading rules include varieties of dBus Tibetan spoken near the Lhasa city and in Lhoka (lHo-kha) District further to the south, plus a few varieties of Khams Tibetan spoken in Dechen (bDe-chen) Prefecture in northwestern Yunnan (Tan 1984:637-9).

[29] The same conclusion is reached by Yip (1993: 257) based on different Tibetan data. Hyman (1993: 77) claims that tone bearing unit is universally the mora.

(20) a. **Tone Association** (**TA**): = (16a)
b. **Low Tone Assimilation (LTA, revised)**: = (18)
c. **Default Tone Replacement** (**DTR**): = (16c)
d. **Trisyllabic Low-Tone Assimilation** (**TLTA**): In a trisyllabic phonological word, if the tone of the initial syllable is L, spread L to the medial syllable and delink the originally associated tone.

Consider the derivation in (21) for the compound `lɛ̱-tɕe̱-pā` 'cadre'in Zedang:[30]

(21)



Thus, although we do not ascribe the redundant non-initial high tone to a H spread from the first syllable, tone-spreading rules do have a role to play in our analysis; namely, they are reserved for cases of **genuine** processes of tonal assimilation such as LTA and TLTA.

3. Related Issues. The foregoing analysis of Tibetan tone hinges on, among other things, the existence of the default high tone and tonal processes that derive word tones from syllable tones. In what follows, additional data will be brought in to further motivate these descriptive devices.

3.1. Why is the Default Register High in Tibetan? It will be recalled from §2.2 that the postulation of the high register as the unmarked or default register value in Tibetan stems strictly from marking phenomena observed in synchronic Tibetan phonology. In order to understand this particular skewed distribution of the high vs. the low register, it is necessary to venture beyond synchrony and consider the paths along which contrastive tone arose in Tibetan. Comparative evidence presented in §1.1 suggests that Tibetan originally must have been in a state where, the effects of stress and intonation aside, all stressed syllables were normally in the high register. The existence of this **atonal par excellence** proto-stage on the Tibetan tonality continuum seems beyond doubt, for this is what we actually find in many Amdo dialects, as indicated above. The first significant change altering this incipient state was the emergence of the **non-contrastive** low register conditioned by voiced initials in such dialects as Labrang. It should be emphasized that in this dialect the phonetically conditioned 'register split' is limited only to the initial syllable, whereas **all non-initial syllables are still high-registered**, much as in the tonal dialects (Hua 1980: 72, Hu 1980: fn. 20). The next diachronic step is taken when, as a result of phonological attrition of syllable initials, the low register came to be minimally distinguished from the high register in certain environments, as in the case of Amdo Sherpa mentioned above (Nagano 1980). At this juncture, the interactions of the two pitch registers in many Khams dialects seem highly suggestive. In Derge and Batang ('Ba'-thang), for instance, syllables which bore voiced obstruent initials in Old Tibetan became low-registered if the original initial underwent devoicing, but stay high-registered where devoicing has not happened, as shown in these Derge examples: *ko̲* 'hear' < WT *go*; ***gū*** 'nine' < WT *dgu* (Qu 1988:323).[31] Furthermore, register on syllables with **synchronically** voiced obstruent initials show variation in register which is apparently random in some dialects (e.g. Derge; Huang 1993:3; Chamdo; Liu 1984) or apparently conditioned by the articulatory positions of the root initials in others (e.g. Batang: ***ɳdʐēē*** 'rice' < WT *'**b**ras*; ***ɳdʐe̲e̲*** 'resent' < WT *'**g**ras*.; Gesang 1985: 24). The Khams data above would be hard to explain if the phonetically conditioned low pitch is assumed to be always present on voiced-initial syllables (e.g. Hu 1980:31). If, instead, we assume a uniform high-register starting point for Tibetan, then the scenario of tonogenesis in this language can be conceived of as **the emergence of the distinctive low register which has encroached gradually on the territory of the high register**.[32] And, moreover, the reason that the unmarked register in modern Tibetan is high is simply that this represents an original state of the ancestral language ubiquitously retained in the modern dialects. Thus, granting the non-initial high register default status is not only well-motivated synchronically, but also congruent with an important generalization in Tibetan phonological diachrony.

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[30] Note that the underlying tone of the bound agentive morpheme **-*pa*** 'the one who...' is unspecified in our analysis.

3.2. Is There 'Tone Sandhi' in Tibetan? As indicated above, the proper domain for tone in Tibetan is the (phonological) word where, regardless of the number of constituent syllables, contrastive pitch register is borne by the word-initial syllable. Since most morphemes in Tibetan are tone-bearing monosyllables (hence the apt term 'morphosyllables' proposed by Light 1978), the question arises as to how, given a multisyllabic word, the word tone should be related to the underlying tones of the constituent morphosyllables. Sprigg 1975:179 argues explicitly against deriving the latter from the former:

> I . . . find it structurally misleading to describe the lexical items sgam 'box', ja 'tea', and yi(g) 'letter' that occur in the first-syllable place of the words sgam-chung, ja-ldong, and yi-ge with contrastive low pitch as having changed tone from low tone to high tone in the words lcags-sgam, gsol-ja, and lam-yig simply because, in these last three words, those lexical items have a high pitch, the non-contrastive high pitch appropriate to the second-syllable place in those words . . .

Ossorio 1982: 57; 114, sharing Sprigg's conviction, denies in even stronger terms the existence of 'tone changes' in Tibetan not only diachronically, but also synchronically:

> There is no evidence that the restricted tonal patterns of multisyllabic words ever developed through sandhi changes of the tones carried by the monosyllabes involved . . . Using the word as the domain of tone there are no tones to be raised on non-initial syllables; **never, at any stage in the derivation, do such syllables carry low tone**.

These claims, however, must be reconsidered in view of the counter-evidence to be presented in the following sections.

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[31] Note that this synchronic state is the exact inverse of the situation portrayed in the slogan 清高濁低 '**High pitch if voiceless; low pitch if voiced**' seen above.

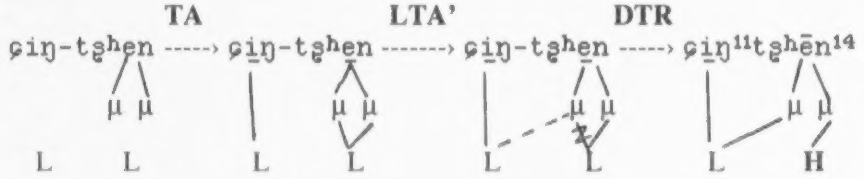
[32] The effects of the low register encroaching on **non-initial syllables** can be witnessed in the various rules of Low Tone Assimilation discussed in this paper (see 25b, 25d, in §2.2 and 27 in §3.2 below).

3.2.1. Low Tone Assimilation in Purang. In §2.2 we inspected in detail a case of tonal assimilation, **LTA**, attested in many Tibetan dialects. An interesting variant of LTA is reported in the Purang dialect where the initial low tone spreads to the right when the second syllable is **originally** low-toned, but unlike in the ordinary LTA, tone-spreading does not occur if the second syllable is originally high-toned (Tan 1984:633-5). The Purang version of Low Tone Assimilation (**LTA'**) can be formulated as (22) (tone rules in Purang are otherwise similar to those in Lhasa):

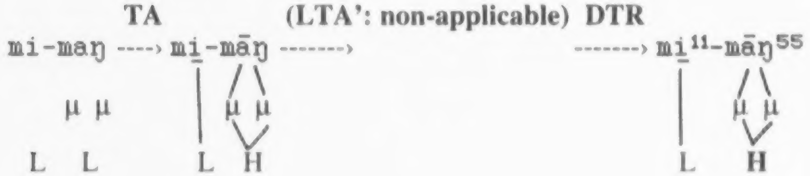
(22) **LTA'**: If the tone of the initial syllable is L and if the second syllable is low-toned and bimoraic, spread L to the latter and delink the originally associated tone on the first mora.

Contrast the derivations in (23-4) of the compounds `ɕiŋ¹¹tʂʰɛɛn¹⁴` 'serf' (phonemicized herein as `ɕi̱ŋ-tʂʰēn` < WT *zhing* 'field' + *bran* 'slave') and `mi¹¹maaŋ⁵⁵` 'populace' (phonemicized herein as `mi̱-māŋ` < WT *mi* 'human' + *dmangs* 'multitude, vulgar'):

(23)



(24)



Thus LTA', a tonal process which shapes the tonal melodies of multisyllabic words, can clearly access the underlying tones of the component syllables.[33]

3.2.2. Negator `ma-` in Lhasa.[34] Another revealing example of the interactions between syllable and word tones is furnished by the negator morpheme `ma-` in Lhasa Tibetan.[35] One unusual property of `ma-`, which always forms a single phonological word with the verb stem onto which it is tagged, is that its tone is always identical to the **underlying** tone of the verb stem, although owing to its non-initial position the latter always ends up bearing the default high tone. Since the inherent tone of the bound morpheme `ma-` cannot be ascertained (barring recourse to spelling pronunciation), we suggest that it is lexically unspecified for tone (i.e. with only a place-holder __ on the tone tier), and that its surface tone is automatically received from the verb stem by applying ordinary tone association. The underlying tone on the verb stem itself is then reassociated with the default high tone under DTR. Sample derivations of the negative forms of the imperfective verb stems tēʔ 'saw' (< WT *ltas*) and tʂi̱ʔ 'wrote' (< WT *bris*), respectively **mā-tēʔ** 'did not see' and **ma̱-tʂīʔ** 'did not write', are offered in (25-6) below (Qu 1981a:24):

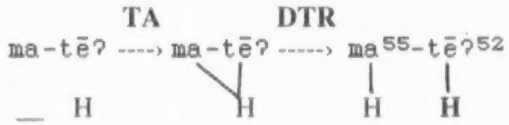
---

[33] Incidentally, the Purang data (as well as the data concerning the prefix `ma-` in Lhasa, see below) cause embarrassment to Duanmu's analysis, as all non-initial underlying tones are deleted from the tone tier at the start of the derivation, making it impossible for other tone rules to refer to them later.

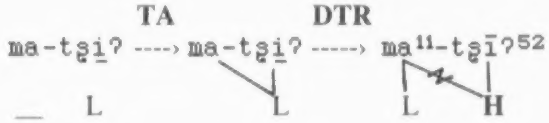
[34] The imperfective negator `mi-` in Purang Tibetan shows the same tonal behavior (Tan 1984: 637).

[35] This prefix is used both with the perfective aspect (in contrast with the low-toned imperfective-aspect negator `mi̱-`) and in prohibitive commands.

(25)



(26)

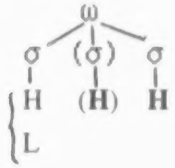


Since here the original syllable tone of the verb stem is **inherited** by the ma- morpheme on its left rather than completely obliterated by tone neutralization, a purely **distributional** approach to the problem at hand (such as Sprigg's prosodic analysis) will fail to give a principled account of the fact that ma- is high-toned in one case but low-toned in the other.

The preceding data constitutes strong empirical evidence that, in synchronic word-formation at least, derivational relations do exist in Tibetan between tones of the constituent syllables and the melody of the multisyllabic word as a whole, and that consequently any adequate description of Tibetan tonology cannot do without 'tone sandhi' rules.

4. Conclusions. In sum, we have witnessed in modern Tibetan a continuum of increasing tonality, reflecting various stages of the gradual emergence of lexically distinctive pitch. A typical tone system in Tibetan differs in two important respects from a typical Sinitic tone system: (i) the basic tonal contrast is that of simple pitch registers: high vs. low; (ii) the register contrast is realized only on the first syllable of a given phonological word. So restricted is this type of tone system, in fact, that tone in multisyllabic Tibetan words may be viewed as adhering by and large to a simple **tone template** (where ω = phonological word; σ = syllable; **H** = default high register):

(27)



As indicated above (§1.1), some tonal dialects seem to be undergoing change in the direction of adding an intersecting dimension of **contour** contrast (high level vs. high falling) on the final syllable. One straightforward way to express this target of sound change in autosegmental phonology is to add a L to the right of the basic contrast of H vs. L, yielding four distinctive monosyllabic tone patterns: H, HL, L, and LL. The realizations of these four underlying tones in the Shigatse dialect is given in Table 6 below (Qu 1981a:189):[36]

---

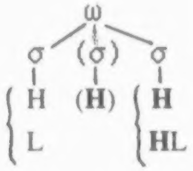
[36] The level/fall contrast is restricted to short rather than long syllables in all three dBus-gtsang dialects discussed in Qu 1981a. This is contrary to what is found in one variety of Lhasa where the rhyme gets compensatorily lengthened with the apocopy of the glottal stop, resulting in the contour contrast being carried by long syllables (Kjellin 1977). Note that this means the contour distinction may not necessarily depend on bimoraic syllable structure, contra Yip 1992: §3.2.

	H	HL	L	LL	Syllable Type
Realization	53	51	12	131	short
	55		113		long

Table 6. Shigatse Underlying and Surface Tones

To account for the fact that the contour contrast is limited to the last syllable in a multisyllabic word, we need only posit a simple rule which realizes (i.e. associates to the segmental tier) the second half of composite tones only at word-final position. The innovative tone template may then be represented as (28):

(28)



It is noteworthy that in (28) the secondary contour distinction is **superimposed** on the basic tone template of (27), such that the final syllable, like all non-initial syllables, still bears the default high register.

In Sino-Tibetan, tone systems that are closest to the Tibetan one are those found in such dialects/languages as Dongkou (Xiang; Yue-Hashimoto 1987: §2.1) and New Shanghai (Northern Wu; Duanmu 1992) in Sinitic, and PaTani (West Himalayish, Saxena 1991), Tamang (Tamang-Gurung-Thakali-Manang; Mazaudon 1977: 54-7; Weidert 1987: §7.1.4; Sprigg 1990), and Konyak (Northern Naga; Weidert 1987: 215-6; 414-5) in Tibeto-Burman. All of these systems are characterized by **initial-dominance** (Yue-Hashimoto 1987: loc. cit.; Duanmu 1992:68), whereby in a multisyllabic domain the pitch pattern of the entire domain is borne solely by the initial syllable with the sweeping reduction of tonal contrast on non-initial syllables. The tone systems of Dongkou Chinese and Tibetan differ from the other systems with respect to the behavior of tone on non-initial syllables. In the former systems, non-initial tones are largely independent of the initial tone, abiding by a more or less constant tonal template such as the ones shown in (27-28) for Tibetan. In the latter systems, however, the tonal melody of the initial syllable is mapped onto the entire multisyllabic tonal domain. Two distinct types of Sino-Tibetan word-tone systems, therefore, can be distinguished: **template word-tone systems**, represented by Tibetan (Tibeto-Burman) and Dongkou (Sinitic), vs. (adopting the terminology in Weidert 1979:84, fn. 28) **contoureme word-tone systems**, represented by Tamang (Tibeto-Burman) and New Shanghai (Sinitic). Needless to say, contoureme systems should represent the more fully tonal type on the tonality scale since the contrastive melodies in such systems are distributed (spread) to the individual component syllables in the domain, whereas in template systems non-initial syllables contribute nothing to the realization of the contrastive word-tones.

In conclusion, if our phonological descriptions are to properly reflect this important distinction in the typology of Sino-Tibetan word-tone systems, then we should reserve melody-mapping analyses for languages like New Shanghai, and adopt instead default-tone analyses, such as the one proposed in this paper, for languages like Tibetan.

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TOPIC CHOICE, SWITCH REFERENCE AND ZERO ANAPHORA: THE ON-LINE CONSTRUCTION OF GRAMMAR

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1. Introduction

This paper studies one specific discourse pattern where zero anaphora in Mandarin Chinese often occurs: the switch-reference pattern. By comparing the use of zero with overt linguistic markings in the discourse patterns of switch reference, the study presents the argument that zero anaphora can be used in the switch reference pattern because there may be different cognitive strategies in reference tracking by speakers of different languages.

This study follows the belief that language is used for the purpose of communication (Fox, 1987; Fox & Thompson, 1990). The study tries to show that language, hence grammar, is contextual, and linguistic information is indexical. It is due to the indexical nature of language that information about a referent which is coded by a zero anaphor can 'emerge' into the Chinese speaker's cognitive understanding in their process of Chinese discourse.

Cross-linguistically, the pattern of switch reference can be summarized into three different types:

a. the canonical type,
b. the non-canonical type, and
c. the inference type.

Of the three types, the third one occurs in Mandarin Chinese (hence Chinese) and is the center of the discussion.

Chinese is a zero-anaphora language, a language that permits abundant use of zero anaphora in its written and oral discourse. Former studies attribute the choice of zero anaphora as opposed to overt anaphoric devices to the discourse notion of topic continuity or to the topic chain construction (Chen, 1986; Givón, 1983a; Li & Thompson, 1981; Pu, 1989; Tsao, 1979). This study demonstrates that in Mandarin Chinese, the occurrence of zero anaphora is not constrained to this pattern only. Instead, in the multiple-referents discourse environment where there are two referents interacting, zero anaphors may code either or both referents; thus the referent of the zero may switch between discourse topics. In addition, the study shows that the switch of discourse topics coded by zero anaphors results in a 'switch-reference' pattern that is not manifested by overt linguistic markings; reference-tracking in this inference type 'switch-reference' pattern can be explained by a set of cognitive strategies termed 'emergent referents'.

The plan of this study is as follows. In Section 2, the paper examines the three types of switch reference patterns by comparing how languages facilitate reference tracking in discourse at the levels of morphology, syntax, semantics and/or pragmatics; in Section 3, the study tackles the question of how reference tracking is possibly carried out by speakers of Chinese (and by speakers of other zero anaphora languages as well). In Section 4, the study concludes by showing the result of an experiment testing the hypothesis of 'emergent referents'.

2. Reference-tracking in discourse and the switch-reference pattern

2.1. Subject, topic and topic continuity

I first discuss two definitions that are closely related to the pattern of switch reference: 'grammatical subject' and 'discourse topic'.

The role of subject is important to this study for two reasons: it is one of the grammatical slots where zero anaphora occurs in Chinese; and it is closely related to the canonical type of switch reference pattern, where in most cases subjects are marked for their referentiality with some other subject.

I do not intend to go into detailed analysis on this issue, but I do want to roughly define what this study takes as the subject. A subject is the phrase (or clause) that has a grammatical relationship with the predicate verb in the following fashions: it is one of the main arguments or the only argument of a predicate verb (Chao, 1968; Ding et al., 1979) the S of an intransitive verb or the A of a transitive verb.

A topic in this study refers to an NP referent that is the center of a discussion in discourse; thus it may be the focus of the discourse (Grosz, 1977, 1980). Since this type of topic can only occur in a discourse setting, it is referred to as the discourse topic in this study[1]. Topicality in discourse is determined by how much the noun referent is in the speaker/hearer's conscious mind while processing discourse information (Givón, 1983a).

The occurrence of zero anaphora is closely related to the issue of discourse topic in Chinese. It is around this role of topic that zero anaphors demonstrate a switch reference pattern in Chinese.

This study is mainly about the occurrence of zero anaphora as opposed to other overt anaphoric devices in the switch reference patterns. According to Givón, the choice of anaphoric devices follows a scale which reflects the discourse pattern of topic continuity, as illustrated below.

1a. Givón (1983a:18)
most continuous/accessible topic
| Zero anaphora
| pronouns or grammatical agreement
| Full NP's
more discontinuous/inaccessible topics

---

[1] In addition to the discourse topic, there is also a topic in the topic-comment construction, which occurs very often in Chinese. For a detailed discussion of this construction, see Chao (1968), Li and Thompson (1981) and Tao (1993).

b. Iconicity principle (1983b:67)

The more continuous/predictable is the topic/subject/referent NP, the less overt expression it needs to receive.

Both 1a and 1b reflect a cognitive tendency cross-linguistically for the choice of anaphoric devices in discourse. The principle in 1b offers a cognitive explanation for the scale of topic continuity as illustrated in 1a. Both 1a and 1b indicate that when a referent is mentioned continuously, and when there is no other NP referent that may be mistaken as the same referent, then the information of this referent is easy to retrieve in people's short-term memories, thus the less overt linguistic coding is needed. According to Givón, topic continuity is the discourse basis underlining the phenomenon of switch reference in all languages (Givón, 1983b).

The iconicity principle argues for the choice of anaphoric devices based on the pragmatic needs of discourse. The principle predicts that when there is a switch of discourse topic/grammatical subject, information of the new referent may be discontinuous or less predictable (than when the topic/subject is continuous); hence more linguistic coding device (e.g., a full NP as opposed to a pronoun or zero anaphor) is used to facilitate reference tracking.

This study contends that on the one hand, Givón's iconicity principle can be illustrated in languages with different switch reference patterns; yet on the other hand, this principle has neglected the strength of inference in discourse so that it does not offer adequate explanations of certain discourse patterns in Chinese. I discuss the second point after we examine the switch reference patterns.

This study only examines zero anaphors whose referents are third persons or objects. The study covers only the zero anaphors that are discourse related. Namely the understanding of the zero has to depend on the local discourse environment.

2.2. Switch reference

Reference presentation is a very important aspect in forming discourse cohesion, and anaphora functions as one of the major reference tracking devices in the discourse of the world's languages (Foley & Van Valin, 1984).

In the introduction section, I proposed three types of switch reference patterns cross-linguistically, which are repeated here:

a. the canonical type,
b. the non-canonical type, and
c. the inference type.

Of the three types, the first two types are similar in that both use overt linguistic markings to indicate whether or not a certain NP referent is coreferential with some other NP referent in the discourse. The difference between the two is that languages with the canonical type of switch reference pattern have grammaticalized this phenomenon with certain morphological markings to indicate switch reference. Languages that belong to the second type only signal the switch of a referent by some overt anaphoric device. The third type refers to a switch reference phenomenon where zero anaphora occurs as in Chinese.

This type of taxonomy as shown above may not seem conventional with regard to the notion of switch reference. But I feel that for the study of the communicative function of language, it is well justified to compare any linguistic or non-linguistic means that serve similar functions of facilitating reference tracking.

Let's first look at the three different types of switch reference patterns.

2.2.1. The canonical type of switch reference

Formally, languages belonging to this switch reference system all have some grammaticalized patterns marking noun referents in discourse. The canonical marking of switch reference "is an inflectional category of the verb, which indicates whether or not its subject is identical with the subject of some other verb" (Haiman and Munro, 1983:ix).

"Functionally, switch reference is a device for referential tracking" (Haiman and Munro, 1983:ix).

Psychologically, a grammaticalized pattern marking referential identities and the possible range of nominal referents can facilitate reference tracking in discourse processing.

With regard to Givón's iconicity principle, the canonical switch reference languages have all developed special grammatical devices to code the pragmatic condition as stated in the principle.

Languages with canonical switch reference patterns have a wide distribution, they include Manchu-Tungus languages (Nichols, 1979), the Papuan languages, some of the Austronesian languages (e.g., Lenakel, Lynch, 1983), most of the North American languages (e.g., Central Pomo, (Mithun, 1993)), and some African languages (Comrie, 1983). Most of these languages demonstrate a relatively strict word order of OV (a few have a VO word order, e.g., Lenakel), and almost all the morphological markings of SS (same referent) and DS (different referent) are on the verbs. The clause whose predicate carries the marking may be called the marking clause. The markings indicate whether or not the subject is the same or different from the subject of the preceding or following clause, which may be the reference clause. The marking clauses may be subordinate to or coordinate with the reference clauses. In addition to indicating referential status, the markings on the verbs may code other grammatical functions such as aspect or valence, as can be seen below.

An instance of canonical switch reference can be illustrated in Central Pomo, a native American language spoken in Northern California. In this language, switch reference is manifested by three pairs of aspectual markers. Let us look at the pair **-ba** (SS) and **-li** (DS), which are used in realis constructions (Mithun, 1993:121).

2a. Subject==Subject (SS)

?a_ cháw=yó-**ba** mát.i ?-chá-ch-**ba** ma?á
I.Agt in=go-same down by.gravity-sit-INCH-same food

qa.-yú?chi-w
biting-begin-p
'I came into the house, (I) sat down, and (I) started to eat.'

b. Subject=/=Subject (DS)
?a   cháw=yó-w=**li** háyu=?el ?úda-w t.o.
I.Agt in=go-p=DIFF dog=the   really

sé-ch-mad=a
glad.to.see-AFF=IMM
'I came into the house, and **my dog** was really glad to see me.'

We can see from these two examples that the referential status of the subjects are clearly marked by the morphological structures of Central Pomo[2]. Notice that in 2b, even though the information of the second referent is shown clearly by a full NP (my dog), the DS marker is still used, a fact indicating the grammaticalized switch reference pattern in this language.

In the Manchu-Tungus language family, switch reference is carried out by a distinctive set of suffixes which occur consistently with SS or DS (Nichols, 1979). The marking clause is a nonfinite clause which has a subordinate or coordinate sense with the referent/finite clause. One of the systems used to mark SS or DS is that SS in the marking clause is indicated by a verbal stem with a suffix indicating number agreement with its own subject (plus tense markers), and DS is manifested by a participial stem with a tense marker, an oblique case (usually dative), and a possessive marker of agreement with its own subject. Following is an example from the Manchu-Tungus language family (Nichols, 1979:421).

3a. (Ulcha, the Amur branch of the Manchu-Tungus languages) (SS)

langi **nene-meri**,   icheheti ...
close go-pl.sim   (they) saw
'Coming up close, they saw ...'   (p.421)

b. (DS)
ti dūse **kalchin -du -ni** ni -de, ingda-da aurasi bichini
dem tiger approach-dat-3sg man-ptc dog-ptc not-sleep aux
(past ppl) (Pos)
When the tiger was in the vincinity, neither people nor dogs slept.   (p.421)

In these examples, the verbs in the dependent clauses reflect two different forms. In 3a, the verb of the marking clause is the verbal stem plus the number agreement with its own subject, which is the same as the subject in the referent clause.

In 3b, however, the verb in the marking clause is a past participle with a dative case marker and a third person possessive marker, indicating the subject is different from that in the referent clause. In the Manchu-Tungus languages, it is almost always different verb forms and their different affixes in the marking clauses that signal switch reference.

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[2] These markers indicate switch reference consistently in elicited sentences. But in natural discourse, occasionally they are inconsistent. The inconsistency reflects the fact that the primary function of these markers are the aspectual relationship between two clauses; switch reference is its secondary function. For a detailed discussion, see Mithun (1993) and Watkins (1993).

Lenakel, an Austronesian language, is different from most other languages having the canonical switch reference pattern. This language is not verb final, and the switch reference markings are prefixes to the verbs. Following are two examples (Lynch, 1983:211).

4a. i -im -vin (kani) m-im -apul[3] (SS)
1exc-past-go (and) ES-past-sleep
I went and slept.

i -im -vin (kani) r -im -apul (DS)
1exc-past-go (and) 3sg-past-sleep
I went and he slept.

What is unique in Lenakel is that the switch reference markers are prefixes. The verb of the first clause takes person and number prefixes which agree with the subject of this clause; the verb of the following clauses take prefixes marking whether or not the subject of the following clause is coreferential with (or echoes) that of the first clause.

What languages with the canonical switch reference pattern have in common is grammaticalized markers on the verbs which indicate referential status. Functionally, all of these grammaticalized patterns seem to share the property of facilitating reference tracking.

2.2.2. The non-canonical type of switch reference

These languages differ from the canonical type in that they lack specific marking systems to mark switch reference on the verbs. Instead, these languages only use the anaphoric devices (e.g., the stressed independent pronouns (Spanish, as discussed by Bentivoglio (1983)), the logophoric pronouns (e.g., Igbo, as discussed by Comrie (1983), etc.) to indicate referential status.

As has been mentioned in the previous section, psychologically, a grammaticalized pattern marking referential identities can facilitate reference tracking in discourse processing. Even though the non-canonical type of switch reference does not resemble the canonical switch reference pattern, functionally they both serve the goal of reference tracking. Givón argues that these languages follow the iconicity principle to code subject referent continuity, as stated in 1b (e.g., English, (Givón, 1983b)).

Let's first examine the following English expression (Givón, 1983b:59).

5. He gave presents to the King and the queen. Hé thanked him, but shé just grunted.

Since English has a M/F gender system in its pronouns, the use of stressed pronouns here is sufficient to code the switch of subjects.

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[3] The abbreviations in the morpheme to morpheme analysis are used for: exc: exclusive; ES: echo-subject.

In some West African languages, there is a set of logophoric pronouns that indicates coreferential status. Examine the next example from Igbo (Comrie, 1983).

6a. ó sìrì nà ò byàrà. (DS)
he said that he came
'He1 said that he2 came.'

b. ó sìrì nà yá byàrà. (SS)
he said that LOG came
'He1 said that he1 came.'

These logophoric pronouns can code different referential status among single third person referents to facilitate reference tracking.

Stressed independent pronouns may also indicate switch reference. In comparing the choice of bound personal pronouns and stressed independent pronouns in Spanish, Bentivoglio (1983) argues that certain occurrences of stressed independent pronouns function merely to signal the switch of reference.

From the functional and pragmatic perspective, almost all languages reflect some forms of the non-canonical type of switch reference pattern to facilitate reference tracking in discourse processing. For instance, to deal with the English expression as illustrated in example 5, Chinese may have to use full NPs since the language lacks a gender system to distinguish the two referents in the spoken language. Yet when there is no need for such a special contrast, Chinese may use zero anaphors to code two different referents in a switch reference pattern. This is the pattern that I am calling the inference type.

2.2.3. The inference type

The inference type of switch reference pattern in Chinese actually is the discourse pattern where the switch of subject/topic is not marked by any linguistic devices at all. In this case, zero anaphors are used to encode two different referents. Reference tracking is thus left for the reader/speaker to infer by means of what is available in the discourse.

The data for this study are from both written and conversational discourse. The written discourse data are from four books (Hong Lou Meng by Cao Xueqin & Gao E; Dongting Hu Shenhua by Kang Zhuo; Zheng Hongqi Xia by Lao She; and Zhongguo Shenhua Chuanshuo by Yuan Ke).

The conversational data are from approximately three hours of natural conversations recorded in four different places, Beijing, Changsha, Australia and the U.S. All speakers in the conversations are native speakers of Mandarin Chinese. The switch reference pattern with zero anaphors has been observed in all four books as well as in the conversations, a fact indicating that this phenomenon has existed in Chinese from the language of vernacular (e.g., the Chinese language as is used in Hong Lou Meng) to contemporary usages.

A zero anaphor in the switch reference pattern can represent either a non-subject in the previous clause (the switch role pattern), or it may 'code' some referent mentioned in the prior discourse. All the referents coded by zero anaphors are considered discourse topics that are at the center of the discussion.

In the following examples, each anaphoric device is assigned a number to indicate which referent it refers to. The location of the zero anaphor is somewhat arbitrary, based solely on my subjective understanding of the discourse data.

Before we look at the switch patterns, I would like to show a Chinese discourse pattern where zero represents the grammatical subject of the previous clause.

7. (Kang, 1991:163)
Nà yí -cì tā-men1 jiāo-huí -le zhè gè yǎng-le jǐ -nián
that one-time 3 -pl hand-return-PFV this Cl feed-Asp several-year

-> de ròu -huò2, 01 yào -le Zhōng-jiā liù-bǎi xiàndàyáng.
GEN meat-goods take-Asp Zhong-family six-hundred silver-dollar

That time they returned the 'meat-goods' whom they had fed for several years, (and they1) took six hundred silver dollars from the Zhong family[4].

This example illustrates a SS (same subject) pattern in that the zero represents the grammatical subject (tāmen, 'they') of the previous clause. The subject 'they' refers to a group of bandits. Since the two subjects occur in two adjacent clauses, this example forms a topic chain discourse pattern. The occurrence of zero anaphora is often attributed to this pattern. (Tsao, 1979, Li & Thompson, 1981).

But the next two examples show that zero anaphora may also occur in the discourse pattern with DS (different subject); thus topic chain is not the only discourse environment permitting the use of zero anaphora. The first two examples illustrate a 'switch role' pattern where the zero represents a non-subject in the preceding clause.

8a. (Lao, 1981:78)
-> Fùqin1 jīn -nián zhǐ mǎi-le yì kē Wǔsèméi2, kěshi 02
father this-year only buy-Asp one CL verbena but

kāi -huā pō mài lìqì.
bloom-flower rather sell strength

This year father1 only bought one pot of verbena2, but (it2) worked rather hard to produce many flowers.

b. (Cao, 1982:892)
Bǎoyù xiān yǐn -le bàn bēi, 01 chǒu rén bú jiàn,
baoyu first drink-Asp half cup see people Neg see

---

[4] The 'meat-goods' in the story is the name given to a group of people raised by those bandits. They were brain-washed so that they could be turned to the officials to take the blames for the bandits.

-> 0**1** dì -yǔ Fāngguān**2**, 0**2** duān-qǐ-lái biàn yì yáng buó.
pass-give Fangguan hold-up-come then one raise neck

Baoyu**1** drank half of his wine. Seeing that nobody was noticing,
(he**1**) gave the rest to Fangguan**2**,
-> (who**2**) threw her head back and emptied it in a gulp.

The parentheses in the English translations indicate that the elements inside are zeros in the Chinese versions.

Both examples in 8 share a similar pattern: the zero codes the referent that is the object of the previous clause. Hence the discourse pattern is DS, but the referents of the zeros are still mentioned in the previous clauses.

Next let us examine examples where the referent of the zero is not mentioned in the immediately preceding clause. We first look at an example from a natural conversation.

9. (Changsha, p.1)
->1. A: Tā**2** (māo) jòu tiào-dào dì -shàng-lái,
it then jump-arrive ground-on -come

->2. 0**1** dào -dǐ gěi tā**2** zhuā -zhù le.
till-end by it catch-stop PFV

3. B: Shì ma?
right Q

4. A: Nèi ézi**1** fēi-lái cuān-qù de,
that moth fly-come dash-go CSC

->5. 0**1** yíxià jiù dào zhèi-biān lái -le.
all-of-a-sudden then arrive this-side come-PFV

->6. Yíxià, 0**2** yòu bǎ tā**1** zhuā -zhù -le.
all-of-a-sudden again BA it catch-stay-PFV

1. A: ... It**2** (the cat) then jumped down.
2. (The moth**1**) finally was caught by it**2**.
3. B: Is that so!
4. A: That moth**1** flew all around.
5. In a flash, (**1**) flew over here,
6. All of a sudden, (**2**) caught it**1** again. ... ...

In this example, the two referents (the cat and the moth) were interacting with the cat trying to catch the moth. We can see that the subjects of four clauses (clauses 1,2 and 5,6) are switching between the cat and the moth. Except for the first subject at line 1, which is a pronoun, the remaining three subjects are all zeros. Although even the pronoun here does not differentiate between the cat and the moth, there is no confusion between the subjects of the verbs of various clause in this example, in which reference presentation is simplified to the extreme.

Next is a similar example from the written data.

10. (Lao, 1981:119)
1. Duì zhèxiē xiāoxi1,
to these news

2. tā2 gāoxìng ne,
he happy Int

3. 02 jiù xiǎng yì xiǎng 01,
then think one think

-> 4. 02 bù gāoxìng ne,
Neg happy Int

-> 5. 01 jiù yóu zuǒ ěr jìn lái,
then from left ear enter come

6. 01 yòu ěr chū qù.
right ear out go

1. As for this kind of news1,
2. if he2 happened to be in a good mood,
3. then (he2) would give (it1) a thought;
-> 4. if (he2) was not pleased at the moment,
-> 5. then (it1) would enter from his left ear
6. and (01) exit from the right one. ...

In this example, there is a person (tā2, 'he') and an object (xiāoxi1, 'news'). At lines 4 and 5, the subjects of the two clauses are both coded by zeros, but their referents are different. The referent of the zero anaphor in clause 5 is not the same as that in the immediately preceding clause, but is mentioned overtly at line 1. Yet such switch of referents does not seem to cause any problem to Chinese readers.

The last example to be discussed reflects how a switch reference pattern with the use of zero is created.

11. (Yuan, 1984:282)

1. Tàiyáng1 chū-lái le, ... Dāng tā1 gāng cóng Yánggǔ chū-lái,
sun out-come Asp when he just from Yanggu out-come

01 zài Xiánchí-lǐ xǐ -le -gè zǎo, 01 cóng Fúsāng shù de
at Xianchi-in wash-PFV-Cl bath from Fusang tree GEN

xià -miàn shēng-shàng Fúsāng shù de diāndǐng de zhè
under-side rise -on Fusang tree GEN top GEN this

shíhòu2, jiù jiào-zuò "Chénmíng".
time right name-as Chenming

2. 01 yǐjīng shēng-shàng Fúsāng shù de diāndǐng, 01 zuò-shàng
already rise -on Fusang tree GEN top sit-on

māma gěi zhǔnbèi hǎo de chēzi, 01 kāishǐ chūfā le,
mother for prepare well GEN chariot begin set-off PFV

zhè shíhòu**2** jiù jiàozuò "Fěimíng".
this time then name Feiming

->3. 0**1** dào -le Qǔ'ā de dìfāng, 0**2** jiù jiàozuò "Dànmíng".
arrive-PFV Qu'a GEN place then name Danming

1. The sun**1** came out,... When he**1** came out of Yanggu, (0**1**) took a bath in Xianchi, and (0**1**) ascended from the bottom of the Fusang tree onto the very top, this time**2** was named Chenming.
2. After (he**1**) had already ascended onto the top of the Fusang tree, (0**1**) sat into the chariot already prepared for him by his mom and (0**1**) started to set off, this time**2** was called Feiming.

->3. When (he**1**) arrived at the place Qu'a, (the time**2**) was named Danming.

This example displays two things: the sun's activities in the morning, and the name of various time periods associated with the sun's ascension. In this example, the first referent, the sun, is often coded by a zero, but the second referent, the time, is presented in full NPs until the last part at line 3, where both referents are coded by zeros, and a switch reference pattern is formed. In this example, the repetition of the verb phrase 'jiàozuò' 'to be named as' in association with the sun's activities have produced a pattern that makes the referents of the last clauses almost transparent. The use of zero in this case seems very natural.

From examples 8-11, we can see that reference switching does not restrain the use of zero anaphora in Chinese discourse. Recall that Givón has proposed an iconicity principle predicting the choice of anaphoric devices with regard to subject continuity. The principle is repeated below.

12. Iconicity principle (givón, 1983b:67)
The more continuous/predictable is the topic/subject/referent NP, the less overt expression it needs to receive.

In other words, the principle predicts that when a certain referent is unpredictable, when there are potentially two NPs that can be taken as representing the same topic/subject/referent, then more overt linguistic coding is needed to distinguish the referents. Languages bearing the first two types of switch reference patterns (the canonical and non-canonical types) all demonstrate the discourse pattern as predicted by this principle. As was mentioned at the end of section 2.2.2, sometimes Chinese discourse also reflects certain patterns that are predicted by this principle. But from examples 8-11, we can see that in other situations Chinese discourse can also produce patterns the principle fails to account for.

It seems counter-intuitive to use the least coding device (zero anaphora) in the situation of switch reference, but a close examination may reveal that if we observe discourse processing from a different angle, the inference type of switch reference pattern may not seem so mysterious. I discuss this point in Section 3.

2.3. Interim summary

In this section we have examined three types of linguistic patterns coding the phenomenon of switch reference. The three types of switch reference patterns illustrate two extremes: on the one hand, it seems so important to facilitate reference tracking in language processing that some languages have developed specific grammatical patterns to obligatorily code switch reference; on the other hand, languages like Chinese can afford not to use any overt linguistic coding for similar discourse patterns. Thus we can see that language formation seems to follow a continuum of presenting information as clearly as possible (e.g., the canonical switch reference patterns) to maintaining the economy in communication (Grice, 1975) by using overt linguistic devices only when absolutely necessary (e.g., Chinese)[5].

The next question is, how do Chinese speakers tolerate the abundant use of zero anaphors? This issue is addressed in the next section.

3. Emergent reference and the construction of grammar

3.1. Emergent reference

Chinese is an isolating language with no phonological or morphological markings indicating parts of speech, gender, case or grammatical relations. This 'under marked' form once led some historical linguists to consider Chinese a primitive language that has not developed to the contemporary level (e.g. like English and other Indo-European languages) with conjugation, word class differentiation and so forth (Schleicher, reprinted in 1983). Even though such a view of Chinese was presented over one hundred years ago and most linguists, as well as people from other fields, have taken a view contrary to Schleicher's claim, the question of how the language functions with practically no morphology still remains unanswered.

The use of zero anaphora reflected in the switch reference pattern in Chinese discourse suggests that it is very likely that looking at overt linguistic patterns alone does not offer sufficient explanation for the abundant occurrence of zero anaphora in Chinese. The solution for the abundant use of zero anaphora can only come from the information in the discourse context. Here I suggest that reference tracking in Chinese is probably carried out with the help of discourse cues (Fox, 1987), which may be one of or a combination of the following:

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[5] Languages with the canonical type of switch reference pattern also require inference in information processing (see, e.g., Haiman & Munro, 1983; Mithun, 1993; Watkins, 1993). On the other hand, Chinese also requires overt linguistic devices when there is the need (see Tao, 1993). This fact indicates that the general trend in language formation is, whenever possible, to provide information which is as explicit as necessary, but not is not excessive or redundant.

13. Discourse cues:
   a. prior discourse context;
   b. specific semantic requirements of the verbs associated with the referents;
   c. the specific nature of the referents presented by zero anaphora; and
   d. language users' general knowledge about the world, including their social, cultural, and personal experiences.

These discourse cues do not seem to offer a specific explanation for reference tracking since it covers almost everything that one needs to consider in language processing. Yet if we consider the actual language data, we can see that reference tracking in Chinese does rely on these cues, though not all the cues have to be considered in each individual case.

In each instance of matching a zero to its proper referent, it is likely that Chinese speakers pay attention to one or two of the cues that are the most salient. The referent of the zero may thus 'emerge' together with the discourse cue to complete the information needed in discourse processing. Let's first consider the two examples in 8.

In 8a, it seems the semantic cue from the second verb kāihuā 'blossom' is sufficient for people to know that it is the plant that is performing this action; hence the referent of the zero in the second clause has to be the grammatical object Wǔsèméi 'verbena' in the previous clause.

In 8b, semantics of the verbs do not offer any specific cues since both people have the ability to drink wine. Here the discourse cue has to be the prior discourse information (Baoyu passing his wine to Fangguan) that informs us the one who drank the wine is Fangguan.

In 9, people have to rely on the status of the two referents (cat the predator, and moth the victim) to make clear which referents the zeros represent at lines 1,2, and 5,6.

In 10, one has to relate to the general knowledge about people (who can think) and about information (that can metaphorically enter people's ears) to infer that the referent of the zero anaphor in line 5 is not the human subject in the preceding clause.

In example 11, it seems that the association of the verb jiàozuò 'to be named as' plus the discourse structure (a type of cause-and-effect pattern) makes it clear that the referent of the zero in the last clause is different from that in the preceding clause.

From the above discussion, it seems obvious that the discourse cues are local in that one cannot come up with a summary of essential cues that can be useful to all discourse patterns (unless of course we call all the cues essential). Next I would like to propose a model explaining how the cues are utilized when Chinese speakers process discourse information.

At the beginning of this paper the study mentioned the belief that language is used for the purpose of communication. In the interactive use of language, the choice of anaphoric devices reflects the speaker/writer's cognitive understanding of the interactive needs in the communication; and reference understanding could reflect the hearer/reader's cognitive strategies. I refer to one set of these strategies as 'emergent reference' in this study.

Emergent reference refers to a set of cognitive strategies used by speakers of a language to process discourse information. To successfully comprehend any discourse with abundant use of zero anaphora, the hearer/reader must pay special attention to discourse cues associated with each referent represented by zero anaphora. These distributed local cues serve as the basis for the interpretive process from which the right referent emerges. The procedure to utilize these cues could be summarized below.

14. Construction and integration

a. Cue identification: When processing discourse information with many referents missing, language users are attuned to the specific cues the local discourse context provides, cues that have to do with the referents;

b. Reference construction: While processing language, individual referents are integrated into an information pattern constructed with information from these distributed local cues;

c. Information integration: By integrating the cues to the recurring zero anaphors, which now serve as the referents in question, the referents that are 'missing' due to the use of zero anaphora emerge, so that reference-tracking is not only possible but also easy.

This 'construction and integration' model is based on the theory that information of a referent is indexical in that it comes from the local discourse context (Heritage, 1984; Fox, 1992). It also maintains that language is contextual in that, since the information about a particular referent that is coded by a zero anaphor actually comes out with the help of local discourse cues, the information has to be constructed locally. Referents thus 'emerge' out of the local discourse context into language users' cognitive understanding.

The construction and integration model is probably unique to speakers of Chinese and other zero anaphora languages as one of the major cognitive strategies used in discourse processing. This point is elaborated in Section 4. Next we look at how grammar is at work with regard to the inference type of switch reference pattern.

3.2. The on-line construction of grammar

The above discussion suggests that the use of zero anaphors in the switch reference pattern is conditioned by local discourse formation. Here the study also maintains that this switch reference pattern also reflects the fact that grammar is contextual.

The linguistic phenomenon discussed in this study seems to be related to pragmatics, which is often set aside from the 'core' studies of, e.g., morphology and syntax. When we talk about grammar, people often think about the well-formedness of individual sentences (at least when grammar refers to syntax). But at the same time people cannot avoid putting sentences into some context to judge their acceptability. Thus one cannot ignore the fact that very often the acceptability of an expression has to be contextual.

When people claim that Chinese is a zero-anaphora (pro-drop in some theoretical framework) language, they are looking at the abundant use of zeros in its discourse, not at the hypothetical zeros that one finds in many languages (e.g., Tā1 xiǎng 01 qù. He1 wants 01 to go); thus the claim about Chinese is based on its discourse patterns.

Based on the switch reference pattern in Chinese discourse, one can see that the occurrence of zeros follows certain local contextual cues: whenever a zero is used instead of overt anaphoric devices, the local discourse pattern almost always provides certain cues that can be associated with it, a phenomenon that happens too frequently to be attributed to accidental appearance in discourse.

From examples 8-11, we can see that it is often the verb that serves as the discourse cues. The manipulation of verb forms could be one of the means of constructing Chinese discourse patterns with regard to the use of zero anaphora.

Another pattern is the apparently headless relative clause whose head is actually encoded by a zero. Following is an example.

15. (Beijing, p.71-76)

1. A: Nĭ -men jùtĭ găo de shì shénme, bìyiè shèji?
you-PL exact make NOM be what graduation design

2. E: Wǒ găo le yí mázuì qiāng1.
I make Asp one anesthesia gun

... ...(A and E continued talking about the anesthesia gun, thirteen more turns.)

... ... (A, G and B talked about water melon seeds, and about A's mother, fourteen more turns.)

... ... (A, B and E talked about Lín, a person not present at the conversation, twelve more turns. There are about three and a half pages of transcription from line 7 to this point.)

->42. A: Ao, na ní găo nèi -ge 01 jiù shì, dĕng -yú
OK then you make that-CL just be amount-to

01 dă -chū-qù yĭ -hoù zhí -jiē jiù, nèi -ge
shoot-out-go then-after direct-connect right that-CL

yào jiù zhí -jiē zhùshè jìn -qù la, ha?
medicine right direct-connect inject enter-go Asp Q

43. E: Tā nèi zhēn -tĭ bà, ...
it that syringe-body RF

1. A: For your graduation project,what exactly did you design?
2. E: I designed an anesthesia gun1.
... ...
->42.A: Oh, that (syringe1) that you designed is just like, (it) amounts to the fact that after (it1) is shot out, (it) immediately -- the anesthesia medicine gets injected right away, is that right?
43.E: Of the internal part of syringes, ...

This example presents another instance of the repetition of the verb associated with a zero anaphor. This time the verb is inside a relative clause with the head (syringe) omitted. Headless relative clauses seem to be one of the structures that is often used to present information about referents without mentioning the referents in discourse (they occurred in both the written and conversational discourse data). I have not done a systematic study of this construction, but the structure appears to be one of the means to associate the verb with a zero anaphor to present information about its referent.

Notice that in this example, the speaker tries very hard to return to the previous discussion of the graduation design by using a headless relative clause and detailed description of the function of the syringe, but the overt referent mázuì qiāng 'anesthesia gun' was never mentioned[6].

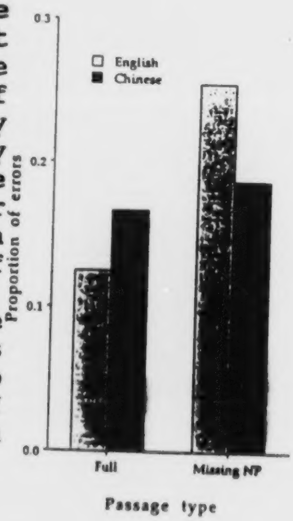
This section has tackled the question of grammar. The discussion maintains that the construction of Chinese discourse is extremely context dependent, as is reflected in the switch reference pattern with the use of zero anaphora. Each occurrence of a zero could trigger a construction of a local discourse unit whose function is to facilitate reference-tracking to make a coherent understanding of the language. Thus discourse production and comprehension should be taken as on-line mental activities.

4. Conclusion

This paper has mainly discussed two issues: how the pattern of switch reference is coded cross-linguistically; and how Chinese speakers track anaphoric referents in the pattern of switch reference with the use of zero anaphora. The paper concludes by examining the cognitive impact of zero anaphora on Chinese speakers

In section 3.1, the paper suggests a set of cognitive strategies termed 'emergent reference' that could be utilized by native Chinese speakers. The paper also suggests that the strategies could also be part of the primary cognitive strategies of speakers of all zero-anaphora languages. The study suggests that these cognitive strategies may not be primary in speakers of languages where zero anaphora is not one of the major anaphoric coding device; thus there is a cognitive difference among speakers of different languages.

A preliminary experiment comparing native Chinese and native English speakers suggests that Chinese speakers seems to be able to handle discourse passages with abundant use of zero anaphora better than can native English speakers.



The experiment used a set of English

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[6] This phenomenon is termed 'a return-pop'. For a detailed discussion of the return pop, see Fox (1987) and Tao (1990, 1993).

passages from a standard test, each passage is accompanied by six four-alternative multiple choice questions. Half of the passages had some grammatical subjects or objects missing (resembling the zero anaphors in Chinese). The results shown in the figure here indicate that even though native Chinese speakers made more errors with the full passages, native English speakers made significantly more errors in the passages that had Chinese type of zero anaphora. The results indicate that it could very likely be due to the different cognitive strategies that native Chinese speakers scored better in processing discourse with abundant use of zero anaphora.

In sum, the abundant use of zero anaphora as reflected in the switch reference pattern in Chinese discourse illustrates the contextual nature of the language. The phenomenon calls for our attention to the nature in discourse formation. It also demonstrates what the study of discourse can tell us about our language and about its speakers.

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論古代漢語中幾種處置式在發展中的分與合

魏培泉

0. 引言

本文所謂的處置式的涵義及其範圍，大致相當於王力(1958)所提出的。我們不打算在此文探討「處置式」這個術語是否妥當。之所以使用這個名稱是因爲學者大致都知道其意所指，而且它也可以涵蓋諸多不同的形式。

過去對處置式起源及發展的研究不少，也有很值得重視的看法。但是由於對語法史上某些語言事實有所忽略(如「持」「用」在處置式發展中的地位)，難免影響到對觀察及推擬的可靠性。因此我們想利用本文讓這些語言事實彰顯出來，並據以重新檢證過去對處置式演變過程及變因所提出的理論。

由於本文側重在處置式的起源問題，因此討論的重點就以隋唐以前爲主。

本文的章節安排是：第一節先把要討論的處置式加以分類，並羅列上古到中古用法和處置式相關的詞。然後再介紹過去對處置式起源的幾個主要論點。第二節討論歷史上幾個不同的詞在處置式上的演變過程，並參酌現代的方言，提供作爲檢證的基礎。第三節則針對過去的起源理論加以討論。第四節則提出筆者個人的主要論點。

1. 處置式的類別以及過去對處置式起源的說法

1.1 處置式的種類

爲了簡化敘述，我們不對分類作詳細的說明，而採用先列出例句，然後加以簡單分類說明的做法。本文處置式的分類大致依梅祖麟(1990)的分法，但因所討論的著重不同，所以略爲加以修改。例句的選擇以明晰爲主，因此並不刻意選取最早的例子。因爲到唐宋爲止，「將」多於「把」，所以以下舉例便以「將」爲主。

1. 如是更將四頗梨鉢，而亦不受，（隋闍那崛多《佛本行集經》801頁）
2. 是時使人，將彼弓來，（同上，710頁）
3. 從鐵圍山，將一大石，來置此地，（同上，846頁）
4. 然此后妃，將諸瓔珞，以施我者，（同上，903頁）
5. 到已，將手抱釋王項，然後卻坐，在於一面，（同上，921頁）（「將」引介工具語，以下簡稱「工具式」。）
6. 將草作鋪。（同上，790頁）（「處置式」，甲一型）
7. 於後證時，當將甘露分布與汝，（「處置給」，甲二型）
8. 從鐵圍山，將一大石，安置佛前，（同上，846頁）（「處置到」，甲三型）
9. 惠虛假，只貪才，甲晚曾將智慧開。（〈維摩詰講經文（二）〉，《敦煌變文集新書》294頁）（純處置，乙一型）
10. 但將賤奴諸處賣卻，得錢與阿郎諸處沽酒買肉。（〈廬山遠公話〉，《敦煌變文集新書》1053頁）（純處置，乙二型）
11. 馬嵬坡塵土中，可惜把一朵海棠花零落了。（〈梧桐雨〉，《元曲選》）

從甲一型到丙型，屬於一般所謂處置式的範疇。在例1中「將」作爲主要動詞。在例2中，它作爲連動式的次要動詞。在本文中，我們將把例2這種和處置式無關的句子排除在討論之外。例3、4這種例句和甲類處置式（如例6、7、8）很相似，只是在「將」和主要動詞間又多了一個動詞（如「來」）或連詞（如「以」）。這種例句並不算在以下論及的連動式之內，我們可以稱它作「準連動式」。(1) 以下所說的連動式指的是具有處置式或工具式的形式和功能而「將」「把」等仍未虛化爲介詞的句式。當「將」「把」這類的動詞用作爲連動式的第一個動詞，相對於其後的動詞，便退居不顯著的次要地位，也較易於「虛化」（grammaticalization），而成爲

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(1) 連動式在漢語中介於單句和複句間，有時候難辨明何屬。如果二動詞間有連詞，則宜視爲複句。「來」雖是動詞，但現代漢語處置式的「把NP」和主要 動詞間不能插入它，因此仍然可以把「來」前的「將」分析作動詞。Sun(1988:205-6)即把「來」「去」作爲「把」是否虛化爲介詞的憑準。準連動式去掉「來」「以」這類連詞之後，形式上就和處置式相當，次要動詞也就有了進一步虛化的基礎。

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介詞或其他的功能詞。只是一個動詞什麼時候虛化爲介詞常常缺乏憑準來斷定，因此在本文中把這種尚未或不需要決定是動詞還是介詞的詞都稱作「次動詞」（指相對於主要動詞是居於次要附屬的地位，因此可以是動詞或介詞）。就本文的行文而言，凡是句式或功能相當甲、乙、丙類的都稱作處置式，不論「將」「把」是否虛化爲介詞。例5的「將」作爲引介工具語用，這種用法和處置式的次動詞無論在淵源上或分辨上都有密切的關係。

我們把處置式分爲甲、乙、丙三類，有的類中還再分型，其作用在以下的討論中可見分曉。現在先大致說明一下。甲類的主要動詞爲三元動詞，(2) 不過其中甲三型的三個論元或可以視爲是「將」和「作」合構的。乙類的主要動詞是二元動詞。乙一型和乙二型之別在於有無補足語。(3) 丙類則動詞或者是不及物動詞或者「把」的賓語是施事而非受事。因爲本文主要是探討乙類的起源問題以及它和甲類間的關係，而丙類相對較晚，因此我們只將丙類分出，而不特加討論。

甲類所以需要和乙類分別開來，是因爲除了「將」「把」之外，歷史上還有「以」「用」「持」也用於甲類句及工具式，而未產生乙類句。這種情形也就像現代普通話的「拿」也用於甲類句和工具式，卻只有在非常有限制的情況下才能用於乙類的句型。「將」「把」的特點是不但有甲類句，也常用於乙類句。

1.2 過去對處置式緣起的幾個主要觀點

過去談處置式的起源主要是針對乙類句來說的，雖然有的人並不分辨甲類句和乙類句，也並未認識到這二者未必有發生上的關係的。以乙類句爲主要探討的對象，那是因爲「把」「將」有提賓作用，牽扯到類型學上的重要問題，那就是漢語到底是SOV還是SVO的語言。這個類型學上的問題並非本文關涉所在，因此以下只談過去對處置式緣起的幾個主要觀點。

「將」「把」處置式來自連動中次動詞的虛化是一個廣爲人接受的看法，如祝敏徹(1957)、王力(1958)、Li & Thompson(1974)、Benett(1981)、貝羅貝(1989)等，另外也有其他的語言可供佐證。(4) 原則上，我們可說先有連動式而後有所謂的虛化。連動式可說是複句的緊縮。當「將」「把」這樣的詞被視爲其後動詞的修飾語，並且和該動詞共享一個受事論元時，在形式上就是處置式的句型了。且當這樣的句式的「將」「把」進一步虛化，且固定搭配主要動詞的受事論元時，那就是一般所謂的處置式了。這樣意義的處置式維持著其所自來的連動式的結構，只是動詞虛化爲介詞了。

綜觀歷來的說法，支持處置式來自連動式的人較多，理由也簡易明白。其中有些人還進一步探求「把」「將」重新分析的緣由，例如Benett(1981)、Sun(1988)認爲「以」的工具式及處置式的用法促使「把」或「將」受到類化而分析爲介詞。這基本上還是應先假定先有連動式的存在。

另外還有些不同的觀點，但並不一定和上述的觀點相抵牾。例如有些人認爲「被」字被動式和處置式的產生有關係，如Tai(1976)、Sun(1988)、梅祖麟(1990)、Huang(1986)等。其理由不盡相同，而是否支持連動式虛化說，態度也不見得一致。如Huang以爲「將」變成介詞是因被動式有處置特徵而起，而Sun認爲處置式是爲了和被動式在動詞前區辨施事和受事而起。Tai認爲處置式是阿爾泰化所產生的SOV句

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(2) 動詞有哪些論元角色仍是見仁見智的事。爲了討論的方便，我們在本文中僅區分如下的論元：施事(agent)、受事(patient)、經驗者(experiencer)、終點(goal)。「終點」包括收受者(recipient)，因爲二者在處置式中的語法表現相類，因此有說明必要的時候才將二者分開。「受事」和「客體」(theme)有時是有分開的必要的。就我們的分類，靜態動詞的主語，或者位移的事物都是「客體」，所以在我們的甲類句中，處置的對象就是「客體」，但爲了易於比較說明，我們把它併入「受事」中。在現代漢語中，承受認知或心理經驗的角色即「經驗者」論元，它要用在處置式中是相當有限制的，因此它和施事是有必要分別開的，即使在本文的討論中我們並不處理這個問題。

(3) 如果把動詞前後的修飾語分別命名爲狀語及補語，那麼現代漢語處置式是否合語法，不僅要看補語，還要看狀語。我們在分類中暫時將狀語忽略掉，是因爲我們將對補語在處置式演變上的地位加以討論，而不涉及狀語的問題。

(4) 如非洲的語言，可參考Li(1975)中Givón和Hyman的文章。

型，至於是來自連動式還是移位，似欠缺清楚的交代。這其中Huang雖認爲「將」處置式來自連動式的虛化，卻贊成「將」處置式是連動式受被動式的影響而產生。Sun如上述是支持連動式虛化說的，而梅卻是認爲處置式的產生主要是受事主語句加上「將」「把」而成。

又有些人認爲處置式的產生和當時語言的表面結構的限制有關，主要的觀點是動補式的補語造成賓語的提前，如Cheung(1976)、Benett(1981)、Huang(1984)。(5)假如提賓是介詞組直接移前，那當然和連動式虛化說相衝突，但似乎無人這樣說，所以所謂賓語的移前從語言演化上仍不能排除來自連動式的可能。

以上是以連動式虛化說爲中心來看其他的觀點，這樣處理的理由在以後的討論也可以大略看出來。此外，有一些學者有自成一套的看法，這些看法頗值得提出來討論。但因這些看法有時稍複雜了一些，從上面的局部介紹中看不出其論證的始末，因此需要個別的說明。爲了避免重複說明，只好不在這裡介紹，留到第三節再一起提出來討論。

2. 處置式史述

本節將概述幾個次動詞在處置式上的歷史(處置式將只就句型而言，不論次動詞是否已經虛化)，這些陳述將作爲第三、四節討論的基礎。本節主要陳述的次動詞有「以」「用」「持」「將」「把」，並旁及其他的幾個詞以供比對。

「以」「用」「持」「將」「把」若按動詞原義大致可分爲三類：1.「帶領」義(「以」「將」)；2.「使用」義(「用」)；3.「執持」義(「持」「把」)。這些義類有時是有關連的，如「帶領」可以引伸出「攜帶」義，再引伸爲「執持」義，再虛化可作爲表「憑藉」的介詞。不過，原本同義類的在發展上未必一致，異類的卻又未必不同。

2.1 「以」

梅祖麟(1990)指出，「以」有處置式甲類三型及工具式等用法，其中「處置給」及「處置作」都已見於先秦，但「處置到」最早在《史記》才出現。如：

12. 天子不能以天下與人。（孟子・萬章下）（處置給）
13. 吾必以仲子爲巨擘焉。（孟子・滕文公上）（處置作）
14. 復以弟子一人投河中。（史記・滑稽列傳）（處置到）
15. 醒，以戈逐子犯。（左傳・僖23年）（工具式）

不過「處置到」實際上也許沒有這麼晚。如：

16. 若以石投水奚若？（呂氏春秋・精論）
17. 今以木擊木則拌，以水投水則散，以冰投冰則沈，以塗投塗則陷，（呂氏春秋・論威）

這種例子和工具式很難區別，如例17「以水投水」和「以木擊木」相對，後「水」似乎也是前「水」對付的對象，非單純的「處置到」。但話說回來，後「水」仍是前「水」位移的終點，和一般的「處置到」又難截然區分。

魏培泉(1993a)指出，「處置到」的興起，和上古漢語介詞「於」的沒落以及新的動詞後的成分限制有關，造成三元動詞的受事論元改放在動詞前而成爲「以」的賓語。先秦表示「給與」義的動詞在句法上可大分成二類。一類利用「以」構成「處置給」的句式；一類原本和「處置到」一樣，採「S＋V＋O＋於G」的句式，到西漢，也改用「S＋以O＋V＋G」的句式。(6)

即使不管「處置到」，先秦「以」已有提賓的「處置給」（甲文中似乎已有），而且也早有「處置作」。那麼這是怎麼來的呢？我們認爲至少「處置給」即是來自連動式。

甲金文中「以」有「率領」的意思。如：

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(5) Huang(1984)和Huang(1986)的意見不一定一致，可參考貝羅貝(1989)的批評。

(6) 英文字母所代表的是：S(主語)、V(主要動詞)、O(受事賓語)、G(位移的終點，包括雙賓動詞的間接賓語以及終點處所)。

18. 丁酉卜，亞𠦪以眾涉于囟，若。（《粹》1178）

這種用法到《史記》還有餘緒。如：

19. 欲以客往赴秦軍，與趙俱死。（《史記・魏公子列傳》）

另外在祭祀的卜辭中所用的「以」似有「進貢」或「捕獲」的意思。(7) 如：

20. 丁亥貞，用望乘以羌自上甲。（《佚》875）

不過「率領」義似可兼括這種詞義，因爲本有掌控他人之意。在祭祀場合操縱俘虜及將之用爲犧牲，似乎是「率領」義可以連及的涵義。「以」的「使用」義或者另有途徑。「用」「以」聲母相同，因此也許是同源詞。我們在金文中常看到「用」「以」混用，而二者都有工具式及「處置作」的用法，而且在兩周之時「以」單用爲動詞時主要的詞義是「使用」而非「率領」。如：

21. 不使大臣怨乎不以。（論語・微子）

這樣看來，「以」的「處置作」用法似可能來自「使用」義。不過先秦「用」似乎無「處置給」的用法（參2.2節），因此「以」的「處置給」未必來自「使用」義，而可能別從「率領」義來。回頭看「率領」義。「率領」義可以引伸有「攜帶」「執持」，乃至「憑藉」義。「率領」爲掌控他人。由掌控人物，引伸到掌控物體，乃至掌控抽象的事物，這樣的延伸在詞義的演變上是相當自然的。如果「率領」義的「以」因所搭配的語詞範圍逐步擴張，而發展到「執持」義，那麼就可以解釋爲何會和後來的「持」「將」「把」一樣發展出甲類句。次動詞在連動式中發展出與原來詞義相異的意義或功能，這也是一種我們熟知的虛化過程。

無論假定處置式中的「以」是來自「使用」義還是「率領」義的動詞，都比假定「以」本有動詞及介詞等多種義項，且處置式只是從無實義的介詞發展出來要更合乎漢語語法演變的規律。

在甲類三型中，「處置到」歷史較晚，要討論甲類句的起源可暫置一旁，先談其他二型。「處置給」的產生應不晚於西周，「處置作」或許稍晚。「以」的「處置給」的產生可以表示如下：

22. NP_i + 以 + NP_j，ϕ_i + V + ϕ_j + NP_k > NP_i + 以 + NP_j + V + NP_k

也就是說「以」詞組原本和其後的詞組是兩句，但在「以」的賓語和後一句的三元動詞的主語、賓語(受事論元)同指的情況之下，使得那三元動詞的主、賓語可以使用零形式。由於在表面結構上「以 + NP」和其後的動詞緊鄰，因此複句造成緊縮而成具有甲類句形式的連動式。

「處置作」的起源似乎不同，因爲先秦「作」和「爲」並無明顯的証據証明它是三元動詞。此式的「以」可能和工具式的「以」有關係。我們可以這樣看它：有一個事物，施事者既以它爲工具，又使得它成爲物理或心理過程變化的對象。這個工具本身同時也是被改變的事物，而改變的結果也可算是一種終點。因此「處置作」在語義上和「處置給」「處置到」也有共通之處。「處置作」的三個論元既可能是「以」「爲」共構而成，因此從來源看，該式的緊密性也許比「處置給」更強。

「以」的虛化應該早在先秦就已完成了。一則在戰國時期的處置式及工具式的用法中已不大容易看出其詞義；二則「以」雖仍有用作主要動詞的，義爲「用」，但例子已罕見，相反的，「用」作爲主要動詞卻很常見。

「以」從未發展出乙類句來。(8) 後來當乙類句產生的時代到臨時，「以」早已虛化爲介詞，已缺乏條件產生乙類句了。因爲照我們的看法，乙類句來自連動式，「以」既已虛化，不是動詞，就不符合產生乙類句的條件了。

在南北朝，介詞「以」已有沒落之勢。如「持」已取代它成爲甲類句的主流，且「持」「用」也常用於工具式。由於書面語的傳承性甚高，所以「以」的見數仍

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(7) 陳初生(1983:201)說「以」的諸義中似有「捕獲」「進貢」之義。

(8) 有些人舉了西周金文的例子，但都是尚不足採信的。葉友文(1988)對此有很好辨析。

然不少，只是常常出現於固定格式中，或者不是介詞而是連詞。如隋<<佛本行集經>>的「以」有1963次之多，但常常出現在「何以故」、「所以者何」、「以...故」、「以...因緣」和「及以」等格式中。這其中表原因的固定格式出現頻率特高。「以」的甲類句約180次(不包括「以爲」，因爲「以爲」似已固化成詞，所以不和「以NP爲(作)」的格式併爲一談)，也只和「持」「將」的甲類句總數相近。我們認爲，在隋代，「以」的甲類句應只是書面語保守作風的一種體現，眞正的主流應已由「將」取代(參2.4節)。至於此前到東漢間，甲類句的主流可能仍然不是「以」，而是「持」(參2.3節)。

2.2 「用」

「用」的原義應相當「殺牲而用於祭祀」，引伸爲一般的使用。「用」在甲文中有幾個例子像是次動詞，引介工具語，(9) 但我們認爲仍可分析爲主要動詞。不過在西周金文中「用」有工具式及「處置作」用法應無疑義。例如：

23. 白公父作金爵，用獻用酌，用享用孝，于朕皇考，用祈眉壽。(伯公父勺)(工具式)
24. 智用茲金做朕文考宄伯䵼牛鼎。(智鼎)(處置作)

金文中常見「用作...」的格式，這個「用」既可能是「處置作」的次動詞，也可能是和連詞「以」相當的連詞(雖然相當的格式「以作...」是缺乏的)。二者的連詞用法應都由省賓的介詞轉化而成的。「用」在西周、春秋的金文中大量出現，常用於「處置作」和工具式中，在工具式中且常常和「以」混用。(10) 「以」「用」原可能只是方言的關係。「用」的「處置作」及工具式的用法在先秦到西漢的傳世文獻中殊爲少見，儘管當時仍常以「使用」義作主要動詞用，而「以」卻相當罕見。例如：

25. 若金，用女作礪；若津水，用女作舟；若天旱，用女作霖雨。(國語・楚語上)
26. 用何爲名？(春秋繁露・立元神)
27. 庸知子用非爲是，用是爲非乎！(說苑・建本)
28. 用此觀之，人之性惡明矣。(荀子・性惡)
29. 下匿其私，用試其上；上操度量，以割其下。(韓非子・揚權)
30. 以爲儒者用文亂法，而俠者以武犯禁。(史記・老子韓非列傳)

但是到了東漢，「用」的工具式和「處置作」用法又逐漸興起，(11) 工具式用法甚至一直延續到今日，「以」卻只殘存於書面語中。由此看來，「用」這種用法在先秦西漢的傳世文獻中少見，應和方言的消長有關。

「用」的「處置給」用法史上不經見，先秦則未見其例。例如：

31. 吾用封汝。(史記・梁孝王世家)
32. 白令勝用尙書授太后。(漢書・夏侯勝傳)
33. 因用吏民所言王氏事示禹。(漢書・張禹傳)
34. 即探囊中五百銀錢，盡用與之。(支謙<<佛說太子瑞應本起經>>473頁)
35. 我今應用此之竹林，奉施世尊，以爲坐處。(<<佛本行集經>>887頁)

至於「處置到」並無可靠的用例。<<佛本行集經>>有四個形式爲「(以)用 + V + G」的例句，但既無主語，且「用」或「以用」直接在動詞後，所以極可能是連詞。(12) 例如：

36. 盛滿香水，以用灑地。(691頁)
37. 即取此釧，用安其缽。(931頁)

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(9) 如戴璉璋(1979:132)就說是介詞。

(10) 參陳永正(1986:311-5)。

(11) 如<<論衡>>的「用」引介工具語就比先前的傳世文獻有較多的用例。此外，傳注有時也可看到用例，例如：

1. 用偶人葬，恐後用生殉，用明器，獨不爲後用善器葬乎？(論衡・薄葬)
2. 且筆用何爲敏？(論衡・定賢)
3. 欲其用禮爲節也。(<<詩・蟋蟀>>「無已太康，職思其居」鄭箋)

在<<佛本行集經>>中就有不少工具式和「處置作」的用例。

(12) 此書「處置給」的用例有多少也因爲常用這樣的格式而難以確計。事實上表「給與」義的動詞在搭配「用」的例子中只有例35是不直接在「用」之後的。有趣的是，接在「以用」之後比接在「用」之後常見得多。「以用」似宜分析爲並列連詞。

「用」在先秦已有「處置作」，但沒有「處置給」，可能在詞義上和「以」互有異同。後來雖出現了幾個「處置給」的例子，可能是因和「以」功能部分雷同而類化的結果。但這種影響既微，也沒有發展出「處置到」，應和「用」的詞義的維持有關，因此不但不大受「以」的影響，也不受東漢六朝流行的「持」用法的影響。不僅如此，也不受後來「將」「把」的影響。經過漫長的歷史，它的工具式仍通行於今，和「把」形成互補的狀況，因爲「把」基本上並不用作工具式。(13) 由此可見，部分詞義或功能的重疊不必然產生更大範圍的類化，而且動詞詞義的保持對於句型是否擴充發展仍有一定的影響力。

2.3 「持」

在秦漢之際，「持」應該已經有工具式及「處置給」的形式和功能。這種句式在當時仍應是連動式，「持」仍然是動詞。這種句式既然形式和功能和次動詞虛化的處置式相同，而且次動詞虛化與否並不易辨識，因此我們以下將具有這種句式的都稱作處置式，在討論「將」「把」時也一樣。以下幾個例子或可算是先秦之例：(14)

38. 以魏之勤，而持三萬乘之國輔之。(國策・魏策二)(工具式)
39. 持白馬非馬也服齊稷下之辯者。(韓非子・外儲說左上)(工具式)
40. 持千金之資幣物，厚遺秦王寵臣中庶子蒙嘉。(國策・燕策三)<<史記・刺客列傳>>同。(處置給)
41. 乃使使者持衣與豫讓。(國策・趙策一)<<史記・刺客列傳>>的「使者」作「使」。(處置給)

這種「處置給」的句式到了西漢就逐漸多了起來，如<<史記>>中就有 8次(動詞分別爲「遺」(3次)、「獻饗」、「獻」、「與」、「予」、「告」等)，到了<<漢書>>中則約18次。例如：

42. 持鹿獻於二世。(史記・秦始皇本紀)
43. 持兒與舜。(漢書・外戚傳)

「持」的這種用法應和「以」無關，因爲在先秦「以」早已虛化爲介詞，作爲主要動詞用的「以」詞義也和「持」不同，因此無從類比。這種句式的產生應和西漢以來連動式的次動詞分攤主要動詞的論元的趨勢有關(參魏培泉1993a)，「持」的這個發展只是這趨勢的一個面相，是配合著當時語言的結構與限制的產物。(15) 此式的「持」極可能仍是動詞，因爲在「持NP」和動詞之間仍可插入「以」「來」「入」「還」「欲」之類的連詞或動詞。比較例44和例45：

44. 乃持羽頭示其父兄。(漢書・高帝紀)
45. 持其書以示丹。(漢書・王商傳)

我們固然可以把例44的「持」視爲已虛化的介詞，而把它視爲處置式，把例45視爲非處置式。但是一則如例44的例句在東漢末之前仍非普遍，且主要動詞不但可以和例45這樣的例子相同，而且在這種動詞和「持NP」間插入連詞或其他動詞的例子也並非少見，因此我們雖把例44這樣的例子視爲處置式，不把如例45的例子計爲處置式，但是認爲二例的「持」都還是動詞。至於處置式的「持」什麼時候虛化則不易斷定，也並非此文所關切的問題。

就文獻看，「持」的「處置到」要晚於「處置給」。<<漢書>>有三個例子。例如：

46. 宇即使寬夜持血灑莽第。(漢書・王莽傳)
47. 持頭送都護在所。(漢書・匈奴傳)

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(13)其實現代普通話還有一個「拿」在這一點上也和「把」呈互補的局面，因此在工具式上和「用」有重疊的現象。

(14)因<<戰國策>>語言所反映的時代恐有爭議，所以不做確論。

(15)也有別的次動詞具有相類的句式與功能，如「取」。但因爲「取」的詞義內涵超過「持」，因此難以普化爲處置式的常式。比較以下二例的「持」「舉」「取」「以」間的關係。

1a. 取財物置其中。(東漢支婁迦讖<<道行般若經>>451頁)
1b. 以財物著中。(吳支謙<<大明度經>>493頁)
2. 舉右手著阿難頭上，摩阿難頭，持手著阿難肩上。(<<道行般若經>>478頁)

「處置到」的發展和「處置給」一樣，是語言結構的限制改變引致的。

「處置作」目前可見最早的例子在東漢末。例如：

48. 持無常作有常。(東漢支婁迦讖<<佛說遺日摩尼寶經>>192頁)
49. 持五百人爲汝給使。(同上作者<<道行般若經>>476頁)

這種句式的產生不無可能是自「以」類化來的，因爲先已有了句式相類的工具式和「處置給」「處置到」，故可以類比推擴而得。

「持」的工具式和處置式在東漢末的洛陽方言中可能已取代了「以」的地位，這可以從兩部內容相當的佛經譯作中看出端倪。如：

50a. 菩薩持初頭意近阿耨多羅三耶三菩，若持後頭意近之？(東漢支婁迦讖<<道行般若經>>457頁)
50b. 闓士以初意近無上正眞道耶，以後意近乎？(吳支謙<<大明度經>>496頁)
51a. 復自破骨持髓與之。(<<道行般若經>>472頁)
51b. 又破骨以髓與之。(<<大明度經>>505頁)
52a. 前持頭面著足已，遶三匝卻住。(<<道行般若經>>475頁)
52b. 前以頭面著足，起遶三匝卻住。(<<大明度經>>506頁)
53a. 持手著阿難肩上。(<<道行般若經>>478頁)
53b. 又以著阿難肩上。(<<大明度經>>508頁)

支謙的譯作較近傳統的文言，而支婁迦讖所譯反倒接近當時的口語。前者用「以」，後者用「持」。從例52及例53來看，「持」似已有相當程度的虛化，因爲實際上不是具體用手來操縱著頭或另一隻手來移動的。不過動詞因借諭而能夠搭配範圍更廣的名詞在語言中是很常見的。由手對具體事物的握持推擴到其他較抽象的心理或物理行爲的掌控是很自然的，這未必就是動詞的虛化。例如現代普通話的「拿」的動詞詞義仍很清楚，但也可以有類似的用法。

「持」的工具式及處置式的用法在東漢以後的佛經中屢有所見，到了隋代的<<佛本行集經>>時，處置式的使用似乎有由「將」取代「持」之勢，因爲「將」的甲類句用例超過「持」一倍有餘(「持」約50次，「將」約120次，二者都是三型俱全)。這可能是政治勢力移轉，新政治中心的方言成爲優勢方言，壓倒了舊時的主流方言，並反映到書面語上。因爲在這之前，我們是難得見到「將」的工具式或處置式的用法的。在<<佛本行集經>>中，「持」雖有498次之多，(16) 但常見於固定的熟語中，如「執持」「受持」「護持」「持鉢」「持戒」……等，差不多佔了「持」用例的一半。這顯示「持」在搭配語詞上有固化之勢，其組詞造句的鮮活力應已在減褪中。此時甲類句中的「持」是否已經虛化爲介詞仍不易判斷，因爲「持NP」和其後動詞間仍常間以「以」「用」「而」之類的連詞，(17) 而且主要動詞也常常和插入連詞的例句是一樣的。我們或許可以這樣看：無論「持」的詞義是否已經虛化，不見得就妨礙它可以和「以」有一樣的甲類句的句式及功能。

「持」未見有乙類句的例句，儘管它應該是有條件可以發展出來的，因爲它原本和「把」可說是同義詞。如下之例可爲佐証。

54. 高祖持御史大夫印弄之。(史記・張丞相列傳)<<漢書・周昌傳>>同。

例中的「之」和「御史大夫印」同指，因此如果「之」省略，就是乙類句。雖然這個時代這樣省略的條件尚未形成，但是作爲賓語代詞的「之」到了東漢六朝已呈急遽衰退之勢(參魏培泉1990:58)，因此理論上已有條件可以以零形式來替代「之」，而造成乙類句來，但是這樣的想象畢竟未曾實現。看來「持」在六朝時要構成乙類句並非不可能，而是接受這種句式的時機尚未成熟。由此可見，由甲類句發展到乙類句並不是那麼順理成章的事。

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(16)包括名詞「軍持」(8次)。

(17)佛經中常常因音節的需要而墊以不必要的虛詞，如「以」「而」之類，所以「以」「用」「而」之類的詞是否可用來証明「持」仍是動詞是一個問題。不過這些詞雖常看來不必要，但是卻不會插在動詞(或介詞)及賓語間(佛經中「於」是常插在動賓或介賓間的，參魏培泉(1993a:769-771)，因此也不能說這些詞的使用是無規律的。儘管如此，要以此來証明這些詞前的「持NP」仍是動詞組恐怕還是不太夠的。

「持」的處置式用法似乎後來就在歷史中被「將」「把」或其他功能相似的詞給淹沒了，我們還不知道現代方言中是否有保留它的。

2.4 「將」

「將」在先秦作動詞有「率領」義，另外有「送」「扶進」「持奉」諸義，看來也和「率領」義有關。基本上這幾個意思大都含有「掌握」及「前進」兩個義素。前文已經說過，「率領」義可以引伸出「攜帶」義，再引伸出「執持」「憑藉」等義。我們認爲工具式及處置式中「將」就是源於「執持」義的動詞。當「將」發展出「執持」義而且具有甲類句的形式，在本文就視爲處置式。

「將」的工具式用法大概始於戰國時期，但是罕見。例如：

55. 百工將時斬伐。(荀子・王霸)
56. 蘇秦始將連橫說秦惠王，曰...(國策・秦策一)

在這種例子中「將」有「執持」義。約在戰國時期也有這樣意義的「將NP」和其後的動詞組間以連詞「以」來連繫的。如：

57. 趙襄子最怨知伯，而將其頭以爲飲器。(國策・趙策一)
58. 我將汝兄以代之。(呂氏春秋・士容)

這樣看來，例55.56的「將」應仍保持爲動詞。

從漢開始，一直到隋以前，「將」用於工具式仍然很少。如：

59. 將何寄之？(新書・俗激)
60. 將氣養物。(新語・道基)
61. 將弓射之，矢沒其衛。(論衡・儒增)

「將」的甲類句更是罕見。目前只見到六朝之例。如：(18)

62. 時遠方民，將一大牛，肥盛有力，賣與此城中人。(西晉竺法護<<生經>>98頁)
63. 今天王釋將我眷屬盡墳天宮。(後秦竺佛念<<菩薩說廣普經>> 7)

「將」的甲類句用法一直到隋代文獻才見大量成長。如<<佛本行集經>>中即有許多用「將」的甲類句，形成此書的一個特色，而且甲類三型都有。(19) 例如：

64. 將草作鋪。(790頁)
65. 我今乃可將臭肉身於此泥上作大橋梁。(667頁)
66. 將所齎食，奉上菩薩。(770頁)
67. 將此女與彼摩那婆，持以爲妻。(863頁)
68. 將一最大寬廣之石，安置佛前。(846頁)
69. 將彼瓔珞財寶之物，懸著樹枝。(922頁)
70. 將好金器滿盛銀粟。(826頁)

例70比較特殊，「將」的賓語是終點，「盛」後保留的卻是受事。「盛」這種用例在此書中出現了幾次，卻沒有「終點」「受事」位置互調的例子。

「將」的流行還有一証。由於「將」的工具式和甲類句的流行，爲了便於和表「將來」的時間副詞「將」作區分，就發展出「將欲」以取代時間副詞。<<佛本行集經>>中的時間副詞「將」因此就不多，不如「將欲」常用。

此書甲類句的「將」是否已虛化也是一個問題，因爲「將NP」和其後的動詞間也可常插入連詞或動詞「以」「用」「以用」「來」「而」「欲」...等，而有連詞和無連詞的例子主要動詞也常有相同的，這使得我們還不敢把此書的「將」分析爲介詞。

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(18)例62不算是好例子，因爲「大牛」和「賣與」間還插了「肥盛有力」來追述「大牛」的狀況，使得句子像複句，而且「將」也難說就不能解釋爲「帶領」。這個例子有點像<<韓非子>>中的一個例子。如：

1. 因令奄將宮人之美妾二十人並遺季也。(外儲說左上)

此例既可解釋作「處置給」(亦即將「將」爲「執持」義)，也可把「將」釋爲「率領」。但因先秦「將」別無相當「處置給」的例子，所以只好暫時視爲「率領」義。如果是處置式，就値得我們對「將」處置式的來源重作考慮了。

(19)有時「將」屬工具式還是甲類句會成爲問題。如：

1. 我將一切諸好飲食，供養於汝。(<<佛本行集經>>910頁)

如果單用「供」，應是甲類句；如果單用「養」，應是工具式。當二詞合併，就不易確定屬於何類。我們在計算此書的甲類句時，這種例子就暫時排除在外，雖然「供養」這種例子並不少。

「將」的甲類句是否受「以」或「持」的類化而產生的呢？「以」在戰國時期已虛化爲介詞，作爲動詞只是殘餘的勢力，而且是釋作「用」。「將」在先秦因有「率領」及「持捧」二種解釋，到了漢以後，作主要動詞則主要是「率領」義，而較少見「持捧」義。但無論何者，都和作動詞的「以」有差距，缺乏類比的條件。此外，已虛化的「以」詞性和動詞「將」不同，恐也難使「將」產生類化。至於「持」是否可能造成「將」的類化呢？如果說是由動詞詞義相同而類化而也發展出處置式，則不無疑問。因爲在漢以後，「將」若作主要動詞，絕大多數爲「帶領」義，只有作次動詞時才使人感覺常有「執持」義。因此要類化比較有可能發生在連動式中。這就是假定有了連動式，才有這種類化，不是僅需靠一個同義即可達成。我們看「將」在先秦的工具式用法即是連動式，而且在這樣的環境下「將」詞義和「持」相當，因此如要類化應早就可以進行。但「持」的甲類句從漢代流行到六朝，何以「將」同樣的用例只零星見於六朝，到了隋代又突然大量出現而冒出了頭？我們對此的解釋是：「將」其實在「以」「持」發展出甲類句時，就有足夠的條件也發展出甲類句的，因爲那正是流行次動詞分攤三元動詞的受事賓語的時代。「將」處置式之所以到了隋代才大量出現，是因爲從東漢到六朝其所代表的方言並非政治中心，未受到重視而無以反映到文獻上。不論在隋代「將」是否已虛化，它的甲類句的發展成熟應早於此時，而且產生的條件是依賴其時語言的結構與限制，而不必是倚賴「持」的類化。如果只是類化，那麼自隋代以後「將」的甲類句突然大量出現和「持」的急遽縮減到消失就不好解釋了。甲類句中也許唯有「處置作」比較可以適用類化的解釋。

「將」的乙類句的產生時代不易確定。貝羅貝(1989:7)認爲如下之例中「殺之」去掉「之」就可以產生乙類句。

71. 我敕左右，將此人以稱稱之，...又告侍者：「汝將此人，安徐殺之，勿損皮肉，...」(後秦佛陀耶舍<<佛說長阿含經>>44頁)

例中「之」複指此人，所以如果「將」和「把」同義，這倒是合宜的解釋。這個例子其實也可當複句看，指涉兩個分開的動作(你抓著此人，然後慢慢地殺他)。不過即使是分開的動作，兩句一緊縮即合爲連動式。一旦零形式替換「之」的時機一成熟，只要複句緊縮構成連動式，就可能造出乙類句。(20) 我們認爲六朝以降「之」的使用率已大爲衰退，因此乙類句已是有條件來造成的。

目前乙類句最早的見例如下：

72. 便謂旁臣：「急將是梵志釋逐出我國界去。」(吳支謙<<佛說義足經>>)

隋以前尚未發現其他的用例。(21) <<佛本行集經>>有如下之例：

73. 將此龍女，莊飾其體。(826頁)
74. 即將種種妙好飲食，自手擎持，以奉如來。(661頁)
75. 我今將此糞掃之衣，何處而洗？(804頁)
76. 後羅刹女，復欲將彼隨意處分。(882頁)

例73「此龍女」和「其體」是一種屬有關係，因此很像後來的動詞後有保留賓語的乙類句。但是此例也未必不能把「將NP」和「莊飾其體」視爲二句。例74的「擎持」後省賓，因此「將NP」就好像是提賓的作用，不過此例「自手擎持」在語氣的連接上和「以奉如來」好像更緊，因此「將NP」也是可以視作獨立爲句的。例75的「洗」帶零賓語，和「此糞掃之衣」同指，因此「將NP」也像是提賓。但是「洗」和「將NP」中間插了個「何處」，而且又隨附個連詞「而」字，因此要視爲題賓也

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(20) 我們對代詞「之」在六朝時的功能頗難下決定，代詞「之」在當時的使用率大爲下降，當時的「之」也許只是「附屬詞」(clitic)，是一種多餘的重指。粵語中的處置式在動詞後還可附添「佢」，如：(參Cheung 1992:286)

1. 麻煩你幫我將封信打打佢。(勞駕您給我把這封信打一打)
2. 將佢紮起佢。(把他綁起來)

唐以後的「之」也許正如祝敏徹(1957)所說只是書面語言的一種形式。

(21) 我們因此疑心例72是複句，釋爲「趕快抓住這個梵志釋，(把他)趕出我們的國界」。

並非毫無疑義。例76在形式上的確和乙類句相同，唯一的問題是「將」在此是否已經虛化。如果其義相當「抓住」，那麼既可把「將彼」和「隨意處分」看作兩句，也可看作連動式。照我們的看法，最初也正因爲「將」保持實義，這種連動式的主要動詞才可以省賓，也才有後來的乙類處置式，以及供「將」進一步虛化的可能。如果我們假設「將」原本就已是用來標示賓語的介詞，那麼這樣的介詞從何而來便很成問題。它不能是由動詞後的成分移位產生，因爲並無「將NP」在動詞後的歷史；如果是一個另外產生而附加在前置賓語的格記號，那麼爲何會突然冒出這樣的記號，而且爲何會是如「將」(或「把」)這樣的詞而不是別的，就是個不易回答的問題。

如例72、例76這種例子的重要性是在於它提供了乙類句的句型。至於「將」是否虛化爲介詞，要看詞義是否褪去且搭配的賓語可涵蓋廣泛而相當受事角色的語義範圍。只是在文獻上要去分辨總不是容易的事，尤其在初現於文獻而例句還不太多的時候。要斷定是否動詞可能還比較可以找出一些憑準，如「將NP」後如果有「來」「去」「以」「便」之類的詞，或者「將」後可以加詞尾之類。(22) 但是要斷定它是否已是介詞，則是相當不容易的。

「將」的乙類句就如貝羅貝(1989)所說，初期是先有乙一型，而後才流行乙二型。<<佛本行集經>>的情形應可作爲此說的佐証。乙二型的特點是有補語。各類補語何時可以用在處置式中，完全要看那個時代有什麼樣的補語。

「將」的丙類句例子在文獻中殊爲罕見，可能是因爲在北方「將」沒落得早而未受「把」的影響。例如：

77. 將一艙活魚都走了。(<<水滸>>，38回)

此例可能是受「把」類化的結果，因爲該書「將」「把」經常混用。我們尚不知現今方言中是否有「將」發展出丙類句的。據Cheung(1992)，粵方言的「將」處置式中是絕無丙類句的。

從文獻上看處置式，「將」「把」呈現此起彼衰的歷史。

考察一些重要的口語文獻，從隋到南宋，「將」是處置式的主流(包括甲、乙類)，一般較「把」常見；從明清以後，「把」又逐漸把「將」掩蓋過去。這可能是方言消長的關係。在宋室南渡之前，「將」應是優勢方言。不過在南宋時的南方還有不少人口使用「將」，並且反映到當時的文獻中。(23) 其影響且尚可見諸現今的粵、客、閩等方言，因爲都還使用「將」處置式。「將」在閩南方言口語中使用較有限制，它同時也還有一個介詞 ka也用於處置式。由於南宋人口的往南移徙，乘此空隙，可能造成北方新方言勢力的興起，「把」也就得到發展擴充的機會。元明清以來的政治中心都在北方，因此北方方言成爲明清以來官話的基礎。其時的官話反映到小說中，便多是用「把」少用「將」；反映到現代的方言，是北方方言也是以用「把」爲主。「將」「把」的互爲消長，其原因應是方言勢力的推移所致。

2.5 「把」

「把」原爲「握持」義，和「持」義相近。如：

78. 因左手把秦王之袖，而右手持匕首揕抗之。(國策，燕策三)<<史記，刺客列傳>>同，但無「抗」字。

在隋唐之前，動詞「把」不常見，更少用作連動式的次動詞的，但是有用在具連詞的複句形式中。如：

79. 禹親把天之瑞令以征有苗。(墨子，非攻下)

隋以前，處置式甲類句罕見。如：

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(22)從唐代以後動詞詞尾「了」「著」才逐漸被使用，可以用來判斷某些詞是否仍保留動詞的用法。如：

1. 將著書簡，引領高俅，逕到學士府內。(<<水滸>>，2回)

但是一個詞同時保有動詞及虛詞用法，在語言中不僅可能，也是常見的。

(23)如變文中「將」多於「把」(參王錦慧，(1993))，<<朱子語類>>也是(參祝敏徹，(1990))。元明以後的<<水滸傳>><<西遊記>><<儒林外史>><<紅樓夢>>中反倒是「把」佔優勢(參向熹，(1958))。

80. 甲把其衣錢匿臧(藏)乙室。(睡虎地秦墓竹簡・法律答問)

81. 把粟與雞呼朱朱。(<<洛陽伽藍記>>四)

82. 把碎草坌著其眼中，令彼人眼暫暗，更閉不得開朗。(北魏般若流支<<不必定入定入印經>>)

乙類句更是未見其例。奇怪的是，在<<佛本行集經>>中「把」用作主要動詞或次動詞例子都極少，而且並無甲類句，卻有一個疑似乙類句的例子。如：

83. 汝今把我人中所愛如意聖夫，將何處置？(740頁)此例「把」或本作「抱」。

到了唐代，「把」的乙類句卻似乎一下子冒出了頭，雖然這種句子的「把」可能有不少仍是動詞。如：(24)

84. 閑常把琴弄。(任華<寄杜拾遺>)

85. 徒把涼泉掬。(宋之問<溫泉莊臥病寄楊士炯>)

例84的「把」或者還可以看作是和「弄」分開的動作，但例85則不可以，因此例85的「把」應算是已虛化的介詞了。(25)

我們粗估了一下，在唐代，「把」「將」的處置式除了甲類句以外，就多爲乙一型，乙二型的例子仍然不多。我們同意祝敏徹(1957)、貝羅貝(1989)的看法，初期乙類句是乙一型，且來自連動式。總計甲、乙二類，唐代的「將」無疑多於「把」，但如僅就乙類而言，二者恐怕差不了多少。因此就初期乙類處置式而論，到底是「將」影響「把」，還是「把」影響「將」，恐難驟下斷語。在探討現代漢語處置式的時候，其實應該把甲類句和乙類句分開來看。甲類句源遠流長，句式產生的語言環境和所代表的意義和乙類是不一樣的。

「把」的處置式在隋以前絕少，到唐宋則逐漸增長，到明清以後成爲主流，這應如前文所說，是方言勢力隨著政經中心的移轉而在文獻上所反映的現象，不應是一條線下來的詞彙替換。

雖然乙二型後來越來越流行，但乙一型也還繼續流傳，而且在現代的方言中也還有保留著的。如：

86. 這潑皮強奪洒家的刀，又把俺打。(<<水滸>>・12回)

87. 蠻把牛打。(渭南方言)(26)

從唐代以來，乙類句動詞的補語在型類及用率上逐漸的擴充，而狀語和「把NP」的相對位置也不斷的在變化。乙二型補語的使用與擴充可能在於賓語提前後所留下的地位可供各類補語的填補。(27) 這也就是說並非因補語的使用才促使賓語提

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(24)如果探索處置式來源的方法是以現代普通話爲基礎往前推，那麼要認定哪些例句是初期的乙類處置式就會有困難。除了唐代出現乙類句的材料顯多於散外，還有別的問題，如現代普通話處置式的動詞通常是不能無狀、補語而以單音節的形式存在的。此外，在普通話中處置式能不能成立也還要依動詞的小類而定。因此如下的例子便應和普通話的處置式的來源搭不上關係。

1. 月下把書看。(貫休<寄烏龍山賈泰處士>)

普通話的處置式不能單用「看」，甚至也不能用「看見」，卻可以用「看完」，這是因爲動詞的各小類對處置式的接受與否是有差異的(Sun(1988)認爲只有「達成」(accomplishment)類的動詞才可用於處置式)。如果我們不局限於普通話，把其他方言相當「把」的也算作處置式，就會發現有的方言也可以使用像例1這樣的句子。閩南語的ka即是一例。如：

2. i ka gua khuaN。(他看我)
伊（把）我 看

青海也有這樣的例子：

3. 我把你沒見。

或許會有人說例1不足爲據，因爲「把」可能仍保存實義，非眞正處置式。可是如下的例子普通話也是不合法的，其中的「把」已是虛化的了。

4. 我把娘子十分錯愛。(<<水滸>>・45回)

這裡所要強調的是普通話不是歷史唯一的遺產，歷史也不是單線發展的。

(25)處置式中的「把」在唐代已可分析爲介詞，但這不意謂著只有這個可能。有時「把NP」和其後的動詞間還可插入「來」「去」「便」...等。如：

1. 且把他來綑做粽子。(<<水滸>>・19回)

2. 把馬去繫在綠楊樹上。(同上，5回)

3.把船便放攏來到岸邊。(同上，37回)

(26)參杜永道(1989)。

(27)參鄢敬敏(1985:208)。

前。因此在文獻中和現代方言中都不乏賓語和補語都留在動詞後頭的事實。(28) 至於狀語，它和動詞間的位置關係也隨時代和方言而變。在「把」處置式的早期，「把NP」和動詞的關係較鬆懈，因爲中間可以插入花樣較繁複的狀語，這很可能和「把」仍保有動詞性有關。即使到了「把」虛化，原有的用法難免也有所殘存。而方言間對狀語位置的安排也不一致，普通話大部分的狀語要放在「把」之前，但其他方言狀語的擺放位置則可以不同。我們可以從如下的例子看到否定詞「不」放在「把NP」之後的用法從古流傳到今，這樣的用法在普通話一般是不許可的。(29)

88. 今人所以悠悠者，只是把學問不曾做一件事看。(<<朱子語類輯略>>44頁)
89. 儘人勞攘，把我不覷。(<<董西廂>>卷二)
90. 林沖每日和智深吃酒，把這件事不記心了。(<<水滸>>，7回)
91. 把雞不要放出來。(渭南方言)(30)

丙類句獨在「把」上得到發揚。這種句式中「把」的賓語已不是一般的受事，而且該式有致使或不如意的意涵在內。這已是「把」原來用法的擴充。這樣的用法見於元以來的部分文獻中，並且還保留在部分的方言裡。(31) 「把」的這種用法可能一直只流行於部分區域，所以並未普及到所有的官話地區。至於這種用法如何產生則尚不能確定。

「把」在唐宋時就已經是甲類三型、乙類二型、工具式俱全了，元明以後還發展出丙類句，它的功能超越過去的「持」「以」「將」。這應和「把」出現較晚、流行範圍廣、使用的人口多有關，因爲這樣才使它有機會混併更多的可能。

2.6 其他

2.6.1 「捉」

敦煌變文中如<<鷰子賦>><<王昭君變文>>中共有好幾個以「捉」用作處置式的例子。如：

92. 良由畫匠，捉妾陵持。(<王昭君變文>，<<敦煌變文集新書>>915頁)
93. 背是捉我支配。(<鷰子賦>(一)，同上1144頁)
94. 官人夜遊戲，因便捉窠燒。(<鷰子賦>(二)，同上1162頁)

有趣的是變文中「捉」都是乙一型，而別無其他用法。這應該和「捉」的詞義有關。在閩南語中有一個同義的 lia，主要也是乙一型。「捉」的詞義較窄，因此不像「持」「將」「把」那樣容易虛化。變文中的「捉」應該還保持著實義，只是主動詞賓語因和「捉」的賓語同指而省罷了。就句式而言是乙類句，但也還是連動式，「把」仍未虛化。「捉」詞義的保持阻礙了它在句型上做更大範圍的延伸。

2.6.2 現代南方方言的處置式

處置式的甲、乙類句在現代方言中似乎是相當普遍的，儘管不一定用「把」。在南方，有其他的詞彙可以用來代替「把」。如「將」在粵、客、閩方言中使用，「拿」在吳語中使用，還有其他一些來源不十分清楚的詞，如閩南語的 ka、客語的 lau之類。

「將」歷史上的用法已如前述，至於「將」在現代方言中的用法仍得隨方言而定。如粵語的「將」的甲、乙類句的使用規則就和普通話有所出入，閩南語「將」在口語中的使用似乎又更有局限性。普通話「拿」只發展到工具式及部分的甲類句以及非常有限度的乙類句，(32) 它基本上仍是個動詞，如可以附加詞尾(如「著」)。可是在吳語中「拿」的甲、乙類句已差不多和「把」相當(不計「把」之丙類)。不過儘管句式大致相當，使用的環境與頻率卻往往不同。如錢乃榮

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(28) 如「V + 得 + NP + VP」在<<朱子語類>>及現代長沙方言中可以看到。如果把甲類句考慮在內，則相對應的「V + NP + PP」的用法在古代文獻及現代方言中也時有所見。

(29) 不過普通話某些熟語性的「不」則可前可後(參呂叔湘(1980:51))。

(30) 參杜永道(1989)。

(31) 就筆者所知，如山西，熱河等方言中就還在使用。至於文獻上是否有更早的例子則尚未確定。

(32) Hashimoto(1976)就主張北方外族語言對漢語有類型上的影響。

(1992:1010)指出，吳語一般的口語喜歡用話題句(即不加「拿」或「撥(=被)」的SOV或 OSV)，而少用處置式或被動式。閩南語大致也是如此。此外，閩南語的 ka 雖話說有時相當「把」，可是在用法上有許多獨特之處(如有的方言「把」的賓語不能是一般的名詞，而得是稱代詞)。因此處置式看似普遍，但是卻隨著方言展現種種不同的風貌。

從方言來看，過去把「把」處置式視爲 SOV的特徵且該特徵是受北方游牧民族的影響的看法是有問題的，⁽³³⁾ 因爲處置式在南方也是相當普遍的。除非能証明南方方言也是受北方方言的影響，否則僅從現代方言的分布作爲立論基礎恐是不足的。

3. 對處置式起源問題的檢討

以上略述了筆者對史上幾種處置式的一個觀察，現在我們就利用它來對處置式的起源問題重作一番檢討。在進行檢討之前，有兩點想先釐清一下，這將有利於以下討論的進行。其一是處置式的句式和次動詞的虛化是應該分開的兩件事，不可等同視之。有了處置式的形式未必就代表次動詞的虛化。如普通話的「拿」雖有甲類句，卻仍是動詞。怎樣的次動詞會虛化，是否虛化，虛化所費的時間，這些問題都和處置式的句式什麼候產生及怎麼產生的問題性質是不相同的。其二是處置式的發生原因和開展原因應該要分清。在我們看來，部分學者對處置式發生原因的解釋毋寧說是對開展原因的解釋。

以下的檢討原則上就配合2.1節敘述的順序來進行。

3.1 說處置式是來自連動式中次動詞的虛化，這就意涵次動詞在未虛化前，不能算是處置式。可是我們看過去提出連動式虛化爲處置式的理論的學者不一定就把次動詞可能還保持實義的例句排除在處置式之外，可見在語料中作辨識仍是有其困難的。其次，即使連動式的次動詞仍保持實義，當它在功能和次動詞已虛化的處置式並無二致時，我們基於什麼理由說這種連動式並非處置式？這麼做的好處是可以把一個語言演變的規律彰顯出來，但這並不意謂著就可以很容易的去區辨次動詞的虛化與否，也容易使人忽略掉虛化後不僅可保持句構，有時還可維持相當的功能。以是否虛化來區辨是否處置式，可能會造成同性質的句式被視爲兩類而不去比較。如普通話「拿」仍是動詞，中古的「持」「將」「把」可能也有相當長的時間是動詞，可是這些詞在甲類句的句式和功能都和上古虛化的「以」相當，那麼是否只有後者才應該算作處置式呢？虛化與否固然會造成應用範圍的不同，但也須是從共通的句式及功能的基礎下來比較才有意義。在這裡，我們並非反對處置式這個名稱以及虛化理論，只是想指出：具有處置式的連動式在實際上和次動詞已虛化的處置式在實際上並不一定可以作嚴格區分，因此在能區分之前，本文把二者一律都稱作處置式，和過去提出虛化說的處置式含義不同。⁽³⁴⁾

3.2 以「以」歷史早於「將」「把」，而「以」又有工具式和甲類句，因此就斷定「以」類化了「將」「把」，並促使「將」「把」分析爲介詞，這可以說是相當自然的想法。不過類化這個原則也不可濫用。如果說「將」「把」在沒有和「以」相當的處置式之前，僅依賴「以」和「將」「把」同義以及「以」有處置式，就可以使得「將」「把」產生相應的句式，這就是值得討論的看法。因爲在「將」「把」產生處置式之前，「將」「把」應仍是動詞，那時「以」就已經虛化了，這就缺乏了類化的條件(因彼此全無共通之處)。至於說「將」「把」先有和「以」相當的連動式，然後「以」促使「把」「將」重新分析爲介詞而造成處置式的看法也不無問

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(33) 普通話「拿」可以造甲類句，但是應用範圍沒有「把」那麼廣，尤其是用在「處置到」就比較有限度。乙類句大概就只有乙一型，如「拿一本書看」。但是因爲仍是動詞(如可附加「著」)，受詞義的影響，它的適用範圍很窄，如不能說「拿一個人打」。「拿」的甲類句各型的適用範圍上的差別應該也和詞義有關。

(34) 我們固然可以把虛化前的句式稱作「準處置式」來和處置式作區別，但這仍然面臨到實際上怎麼區別二者以及在作比較時稱呼上易致困擾的問題。

題。首先，在「把」「將」虛化之前，「以」就已經沒落了。其次，「以」只有甲類句而無乙類句，它頂多只能促使「將」「把」在甲類句中的虛化。如果它在「將」「把」產製乙類句之前就使「將」「把」完成虛化，那麼「將」「把」的乙類句應無從發生。乙類句的產生須在「將」「把」仍爲動詞時才有可能，這也可以說明已虛化的爲何不能再產生乙類句。最可能因「以」而虛化的應該是「持」，因爲二者時間上相銜接，也都只有甲類句而無乙類句。唯一的問題是我們還不大能斷定「持」後來是否虛化或者虛化程度是否和「以」相同。按照我們的看法，次動詞的虛化可以是自然的演化，不一定是受到其他詞的類化。「持」的「處置作」有可能是受到「以」的類化，但是這應是建立在「處置給」「處置到」句式既有的雷同上，而不是因爲詞義的相同。「持」的「處置給」「處置到」可能都是連動式普及下的自然歸趨。只有「處置作」還難說，因爲它需要次動詞和「爲(作)」緊密的配合，因此就有可能是在「以」「持」都共有「處置給」「處置到」而後類化完成的。不過類化不是造成「持」產生「處置作」的唯一解釋，因爲我們認爲普通話「拿」的「處置作」就不是由「把」類化而產生的。

3.3 以「被」字句作爲引致處置式產生的原因，這是著眼於處置式的句型來源。提出這種構想的一個出發點是將「把」「被」當作格標記來看，也就是說是依據有了施事標記就應有受事標記的想法來的。但是即使僅就初期處置式而言，「將」「把」都不一定只是標示受事，如例70引介的是終點而非受事。再者，魏培泉(1993b)指出，被動式的「被」從來不是介詞，而是母句動詞，因此結構和處置式是不能相提並論的。此外，要說被動句和處置式的關係，也還得辨清是否包括甲類句。含施事的「被」字句是到隋代才有較多的用例，可是處置式甲類句卻早已有之，至少「持」的引介受事不可能自「被」字句來。即便是「將」，最早也多是甲類句，動詞爲三元動詞，可是被動式卻很少是三元動詞的，何況「將」處置式產生的時期也不見得晚於含施事的「被」字句。因此至少「將」甲類句的產生和「被」字句毫無關係，能連上關係的頂多只能就乙類句而言。此外，如果說「被」是施事標記，那麼要和受事相對比可以採取的方式也不止一途。例如現代方言也有用話題句來替代處置式的功能的，此其一。在動詞前要分辨施事、受事，可以只用「被」來標示施事，而用φ來標示受事，一樣可達到區辨的效果，此其二。最後，要選擇和「被」對比的受事標記，所選擇的何以是「把」「將」，而不是其他的詞？

被動式造成處置式的另一個構想是被動句有處置特徵。這個構想所指的處置特徵就是動詞有體貌詞尾(如「了」)或者是有動補結構。但是我們知道，初期的乙類處置式是沒有這種特徵的，而且在乙類句產生之前被動式的例句中這種特徵的是相當少的(詞尾「了」甚至尚未發生)。至於甲類句和被動式更難談上什麼關係了。一則孰前孰後尚成問題；二則甲類句是用三元動詞的(「處置作」則不論)，被動式則幾乎都是二元動詞。

3.4 如果主張處置式的產生是因爲動詞後成分的限制而使賓語提前，那也得把甲類句和乙類句先分開來說。初期乙類句是乙一型，並不存在動詞後成分的限制問題，何況當時的使成動補結構也不算十分發達。再說現代方言也還是有乙一型，或是賓語、補語共現於動詞之後的。(35) 如果單就甲類句而言，把動詞賓語分配給次動詞的趨向的確是早就有的。不僅「將」「把」，更早的「以」「持」都是。不過這種規則僅限於三元動詞，而且有時提賓卻不一定是因補語的擠壓造成的。如下面二例動詞後是空的。(36)

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(35) 如使用「把」的渭南方言就有乙一型。閩南語雖不用「把」，但乙類句也有乙一型。長沙方言可以在補足記號「得」後同時有賓語及補語的(事實上這也是延續歷史的，如<<朱子語類>>就有同樣的句法)。

(36) 其實在六朝時就有如下的句式：

1.(NP) + 持 + (NP) + {著，與…} + (NP)

不過當時「著」「與」是否已分析爲介詞是一個問題(參魏培泉(1993a))，所以我們並未拿來作爲動詞後成分限制說的反証。

95. 火急將吾錫仗與。(<大目乾連冥間救母變文>，<<敦煌變文集新書>>70頁)

96. 將一長刀，向菩薩擲。(<<佛本行集經>>788頁)

我們認爲，如果只談乙類句，那麼動詞後成分的限制不會是它的起因，因爲這種限制的成立是在乙類句相當普遍之後的事。是乙一型先產生了，相應的動詞後就有了容納其他成分的空間，這種分散成分的便利才使得乙二型更加發展開來，然後才有今日的成分限制。但是否要接受一個表面結構上的限制，則還要視方言而定。因此在傳統文獻及現代方言中都可以看到不遵守普通話表面結構限制的現象。

3.5 以下再針對幾個學者的看法來加以檢討。其意見有上述困難的，就不再作重複的批評。

3.5.1 Huang(1986)以爲連動式的次動詞「將」受「被」的影響而重新分析爲介詞，然後「把」再以詞彙替換的方式接替了「將」。

關於「被」使「將」虛化爲介詞的困難已如前述，不必再談。他理論中特別的地方是「把」對「將」的詞彙替換關係。其立論的出發點是初期處置式「將」多於「把」，因此「將」應前於「把」。但我們覺得他應把處置式的甲、乙類分開來看。如果就初期乙類句而言，「將」和「把」哪個較多或哪個在前仍是問題，所以若說詞彙替換，也不知哪個替換哪個。更成問題的是，假如「將」先已虛化，而「把」還是動詞，那麼兩個詞性、意義不同的詞如何進行詞彙替換呢？只有假定詞義、詞性和「把」相同的動詞「將」同時常用才有可能造成這種替換的結果。如果句型的產生可以僅憑這樣的詞彙替換，我們就可以把處置式的詞彙替換推得更前。如「以」「持」和「將」都有相似的甲類句，是否也可按其時代先後說「將」替換「持」，「持」替換「以」呢？

3.5.2 梅祖麟(1990)將處置式分爲三型。甲型即「處置作」「處置給」「處置到」；乙型、丙型都是用二元動詞，而乙型是動詞有狀語或補語修飾的，丙型則只有動詞，無修飾成分。他認爲甲型是源、丙型爲流，又認爲乙型、丙型是由甲型發展而來。他特別提出受事主語句在處置式的產生上居關鍵地位。處置式興於南北朝，當時受事主語句已形成。爲了和被動式作區別，就在受事主語句上加上「將」「把」即成處置式。此外，處置式是由甲型擴充到乙、丙型的。但他同時又認爲丙型的產生又不同，因爲不能直接加「把」「將」而成。同樣的，「以」雖也有甲型，但因更早並無相應的受事主語句，所以產生的歷程也和「將」「把」不同。

關於他理論中被動式的問題這裡不再提及。他理論中特別有異於人的是認爲處置式的產生是在受事主語句上加上「將」「把」而成。這個看法的問題是：若處置式只是受事主語句加「把」「將」而成，那麼它的施事主語從何而來？更有進者，「把」「將」是怎麼產生的？怎麼會被選來和「被」作對比而不是由其他的詞來擔任？由於他把處置式和受事主語句關連起來的構想是來自普通話的受事主語句通常是有補語的，因此在推尋處置式的來源時，不能不把他的丙型句(亦即無狀、補語的乙類句)排除在外。他對這個例外的解決方式便是把丙型視爲旁支，不是主流。他這樣做的缺點是把他的丙型和乙型割裂開來，視爲不相干的演變，而且等如把乙一型前於乙二型的事實推置一邊。然而事實上，一則乙一型不僅見於古文獻，在現代方言中也還保存著；再者，現代漢語或中古漢語的受事主語句和處置式在搭配補語上也不見得一一對應。此外，採用這一套解釋不僅要對「以」處置式的起源問題放棄解釋，連帶地也不能處理「持」處置式的起源問題。

3.5.3 Her(1990,1991)提出「以」類化「將」，「將」類化「把」的理論，並預測「把」也會類化「拿」。而時間居後者之所以會受到居前者的類化，是因爲居前者所負擔的功能過多，需要其他的詞來分擔部分的功能，這就是一種「精化」(functional refinement)。類化原則和精化原則互爲推拉，就造成語言不斷的變動。在他的理論架構中，一個動詞會受到類化而獲得另一個詞的功能與句式，主要在於享

有共同的詞義。這樣看來，甲詞只要具有和乙詞一樣的詞義便可模仿乙詞而產生同樣的功能和句式。從Her的理論中可以看出他並不支持處置式來自連動式的說法。

Her用兩個原則的共同作用來解釋語言的不斷變動，就理論而言是很吸引人的。不過驗諸實際的情況，這種推拉造成處置式演變的理論似乎不能配合事實，至少我們也看不出精化原則可以用來解釋他所說的演變。例如他說「將」因類化而得到「以」的工具式及處置式的功能，接著「把」也得到「將」的工具式及處置式的功能，接著「拿」可能也會取得「把」的這些功能。在他描述的變化中，我們只看到類化，而沒看到他所謂的精化。他的處置式歷史是「以」「將」「把」前後相繼。當「將」興盛以後，「以」就淘汰了；當「把」興盛以後，「將」也就淘汰了。居後者並沒有和居前者分攤功能，它只是把居前者排除掉了。精化原則即指功能的分攤，但是卻沒有在他所陳述的歷史中得到証實。再者，要談精化，似乎也不能忽略「用」，至少「用」保有了工具式的用法，並且也曾在不同時代和其他的詞有過功能上的重疊。他的類化說可能也失之過簡。甲詞只要和乙詞具有相同的詞義以及詞性就可以進行類化而取得乙詞的功能或句式，就好像一套既有的公式，只要代入同義的詞彙就完成一次演變。那麼這個原則付諸實際又怎樣呢？首先，他的應用至少有一點不太對。因爲「以」虛化得相當早，如何能使後來詞性、詞義都不同的「將」產生類化而取得「以」的功能或句式呢？其次，詞義相同未必即可替換而取得相同的功能。例如「用」在先秦有一個階段和「以」同義，但是「用」一般只用在工具式及「處置作」，它的「處置給」例子罕見，而且遠在先秦之後，而「以」的「處置給」在先秦已相當流行。「用」的「處置給」很可能是因爲和「以」有句式上的雷同而類化的，而不是因爲同義關係。「以」後來發展出「處置到」，它也沒有平行的發展。因此事實上，「用」「以」的關係基本上是維持著先秦的情況，一直到「以」沒落爲止。此外，「將」的乙類句用法是新的功能，是「以」所無，這是不能靠類化產生的，他對這點也缺乏交代。

4. 結論

語料中所呈現的處置式歷史表面上看有時像是一個循環的過程。後起者取得了居前者的全部功能，然後將居前者加以吞併而取代它。從先秦到西漢，「以」發展完成處置式甲類諸型；然後，從東漢到六朝，「持」又成爲甲類句的主流；從隋唐到宋，「將」不僅取代「持」成爲甲類句的主流，也是新生的乙類句的主流；到了明清，「把」又成爲甲、乙類句的主流。這其中又可大分爲兩個階段。在隋以前，幾乎就只有甲類句而沒有乙類句，乙類句是在唐代才得到開展的。這只是個概觀，有些旁出的現象需要更深入的審視才會呈顯出來，如先秦「用」和「以」的關係或者元明以後丙類句的發展等。

上頭所呈現的各領風騷的現象其實是相當浮面的觀察。如果把它當作一種前後相繼的過程，那麼只是把語言史當作單線式的演化來看。要是我們把這語言的演變史與政經文化史對照著看，不免就會對這種單線思維產生懷疑。我們發現，這些新舊處置式輪替之時往往也正是政治勢力移轉的時候。如「持」突然流行起來是自東漢佛經開始，當時的政治中心和西漢時是不一樣的。「將」的湧現且壓過「持」是在隋唐。由於當時是北方統一了南方，北方於是又成爲政經的焦點，不免將先前南方在文化上的優勢遮蓋了去。「把」盛於明清。當時不僅政經中心和宋代不同，北方的族群和南宋之前也有相當的差別，因爲南宋時有大量的人口由北往南移。由此看來，新處置式的產生可能和優勢方言大有關係。作爲政治中心的方言往往是優勢方言，而優勢方言的語言現象往往也較能反映到文獻上。這可以說明爲何政經中心或勢力移轉到其他區域時，文獻上的語言有時也可以看到變化。這其中尙需補充說明的是東晉和南宋人口移徙時的方言變化問題。六朝的語料中「持」的使用似乎一直保持著，直到隋代才以「將」取代，所以看來南北方言似無不同。但我們應知，

東晉人口即使大量南移，導致方言分布的變化，但是北方文化顯然居於弱勢，所以在六朝的語料中，其語言所反映的可能是比較接近以南京爲中心的普通話，而這普通話應該也繼承了不少東漢以來普通話的成分。「將」也許早在隋以前就在北方的西安流行了。隨著北人重掌政權，普通話的方言基礎也就改變了。「把」在北方逐漸壓過「將」，這種轉變也許自金已有，只惜今日流傳的南宋口語材料顯然以南方佔絕大多數。「把」的勢力的展現是到元代才逐漸在文獻中浮出來。

我們這裡想強調的是：漢語從來是多線發展的，但是有幸有不幸，有的方言比較有機會將其特點反映到文獻上，而通常政經中心所在的方言區是比較能獲得這個機會的。當政經中心一移轉，不同方言所帶的不同語言色彩就有機會反映到文獻中。由於文獻中新舊處置式的輪替恰好和政治勢力的移轉相平行，因此我們相信這種輪替不是同一方言區前後的變化，而是方言勢力的興替。所以表面上看來，是後起者統一並吞併前者，可是實際上方言的分異一直是存在著的，儘管各方言本身也是會變的。舉例而言，「將」原是唐宋處置式的主流，但因南宋時人口的大量南移，導致北方方言勢力的改變，而後在明淸時「把」就成爲處置式的主流，「將」則保留在南方的粵、客、閩等方言中。有時方言的特點也會隨著政經地位的移易而沒落，如「持」似乎不見於今日的方言，可能和它沒落得早，沒機會發展出乙類句有關。

以上的看法也和我們怎樣對待處置式的起源問題是密不可分的。當我們說乙方言的處置式取代了甲方言的處置式時，我們並非指乙方言是以詞彙替換的方式來獲致處置式的。我們其實是說，當乙方言成爲新的優勢方言之前，就已經有了自己的處置式，乙方言只是取代甲方言成爲新的普通話或通俗文獻上的通用語，但別的方言仍可維持自己的發展。這個觀點可以驗諸處置式及工具式的歷史。雖說文獻上所反映的處置式的歷史是，「持」接替「以」，「將」接替「持」，「把」接替「將」，但是這些接替者誕生的時期未必就在新舊交替間。如「持」「把」的甲類句並不晚於秦漢之際；「把」的「處置到」甚至和「以」的「處置到」的產生時期略相當。至如工具式，則「持」「將」都已見於先秦。「將」「把」的處置式在西漢之前沒有得到充分的發展，就不只是類化或線性思維可以說明的。

依我們的看法，有史以來，連動式一直是漢語的一個語言現象。最初它創造了「以」的「處置給」和工具式(「處置作」稍後再談)。「處置給」的創造，建立了把三元動詞的受事賓語分配給次動詞的模式。由於先秦介詞「於」仍肩負著引介終點的功能，所以「以」的「處置到」並沒有隨著「處置給」立即產生。大約到秦漢之交，「處置到」才出現，同時「於」在引介終點的功能上的地位也逐漸失去。只要有連動式，和「以」同義的詞就很容易產生工具式。只要將三元動詞的受事賓語分配給次動詞的模式一建立，凡是能常用作次動詞並能分攤三元動詞的受事賓語的動詞就有機會建構甲類句的句式。如果這動詞意義夠寬泛，且動作時間一般和三元動詞相重疊，那就很容易成爲甲類句的常式(意義較窄的「取」,雖曾有甲類句的例句，但卻不能成爲甲類句的常式)。因此「持」「將」「把」的甲類句或工具式在西漢以前就出現並不是件奇怪的事。它們能不能出頭的關鍵是在歷史是否給與機會，如其所屬的方言成爲優勢方言即是一個好機會。

現在我們可以進一步來談漢語史上工具式及甲、乙、丙三類處置式的起源與過程，以及其在類型學上的意義了。

在不同的時空中，漢語以更換次動詞的模式不斷地呈現同樣的句型，所依賴的不止是次動詞詞義的相同而已，主要還在於漢語的結構類型提供了那些同義詞在同一句型中充作次動詞的環境。

只要是具有「使用」或「執持」義的動詞就很容易借連動式造成工具式，無論它後來是否虛化。因此「以」「用」「持」「將」「把」「拿」...等都有引介工具

語的用法。當具有特定意義的動詞成爲次動詞且分攤三元動詞的受事賓語的模式成爲一種結構類型時，就很容易延伸到具有相類意義的動詞上。「以」和「持」「將」「把」「拿」的「處置給」或「處置到」句式的產生即是這種結構類型下的產物，而不應只是倚賴和他詞詞義相同而類化產生的。「取」也可以作次動詞而造出甲類句的句型，但它的意義內涵超過「執持」(外延則較窄)，因而難以成爲常用的處置式(它應仍是連動式或甚至可分析爲複句，主要是因爲「取」和其後的三元動詞不容易合併爲一個時間上不可分的動作)。

「使用」義的動詞似乎比較不能造出「處置給」及「處置到」的句型的。因此「用」雖然在上古就如同「以」一樣有工具式和「處置作」的用法　而且到今日引介工具語主要還是用它，但它在「處置給」「處置到」的句型上幾乎沒有得到發展。從它不太受到「以」的類化上看，可以說明次動詞的詞義可以一直保持著，並且可以控制到句式的發展。

「處置作」的來源最難確定，其次動詞可能是源自「使用」義的動詞(「以」「用」即是例子)，或者也來自「執持」義的動詞(「持」「將」「把」「拿」等都有「處置作」)。「以」在先秦就有「執持」和「使用」二義，因此「持」「將」「把」的「處置作」的產生既可能是連動式的自然歸趨，也可能是受「以」的類化所致。假如是類化，那麼類化的基礎就不在詞義和「以」相同，而是在於都共有「處置給」「處置到」的句型。從普通話「拿」「把」都有甲類三型而「把」早已虛化這點看，「拿」的甲類三型不大可能是受「把」的類化產生的。因此「處置作」的產生也是有可能是來自連動式。

乙類句也是來自連動式的。當連動式中的主要動詞的賓語因和次動詞賓語同指而省時，乙一型就產生了。「將」「把」的乙一型從唐代開始流行，就是因爲這樣的條件已經成熟。由於乙一型在動詞後的位置上留下可供補語發展的空間，因而隨著動補式的逐漸廣用，乙二型就在乙一型的基礎上很自然地產生了。乙二型的特點是可以使賓、補語分由動詞前後的位置來分攤。這樣的結構類型建立以後，對方言的影響是相當廣泛的，因爲即使在南方的方言中這種句型也是相當普遍的現象。這種類型擴大到不同的方言，並非只是單純的詞彙的替換，因爲乙二型在方言中的差異不僅是次動詞詞彙的參差，而且在使用的限制上也是有不同的。例如在普通話使用處置式的場合，其他方言未必用處置式表達，且動詞後的成分限制或動詞小類的限制也不是處處皆同的。

丙類句的起因可能源自對「把」功能所作的重新分析。這種變化一直局限於方言，因此在文獻及現代漢語方言中都不普遍。

綜合上述，甲、乙類處置式大體是來自連動式的。隋以前基本上只有甲類句，當時流行次動詞分攤三元動詞的受事賓語的句型。隋以後，乙二型因補語可以得到較充分的擴充而成爲一種普遍的結構類型，但是其基礎則來自具有乙一型句的連動式的。因爲有這樣的結構類型而造成不同的詞一再地構建出同樣的句型，而會有這樣的結構類型也正基於漢語有連動式。漢語會有創造處置式的連動式至少和漢語具有一些類型特徵是相關的。這些特徵如「主題標顯」(topic prominent)、「代詞刪略」(pro-drop)、形態缺乏、X標槓結構限制等。(37) 這些特徵所造成的一些現象是造成連動式或處置式產生的先決條件，如複指不必有外顯的語音形式、複句可以緊縮而和單句難以區別、主要動詞和次要動詞或介詞在形式上難以分辨、次動詞位居主要動詞之前等。

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(37) X' 標槓結構限制爲Huang(1982:41)提出，其主要意旨是：漢語的表面詞組結構，除了最小的 V' 以外，都是中心語在後的。

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Word Order Flexibility in Chinese: A Typological Study of Mandarin, Min, and Yue Dialects

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1. INTRODUCTION

It has been generally agreed among linguists that Chinese has Subject-Verb-Object (SVO) word order (Li and Thompson 1974a, 1974b, 1975a, 1975b, 1981; Tai 1973, 1976, 1978; Light 1979; Sun and Givón 1985; Xing 1993 among others). Its alternative is OV order in which the subject can either precede the verb yielding OSV form or precede the object yielding SOV form. When the latter form is used, the object is often marked by the morpheme 把 *ba*, 將 *jiang/tsiang/tṣueng*, 給 *ka*, 對 *tui*, or 連 *lian/lin*, depending upon dialects (Zhao 1947, Li 1950, Zhang 1972, Gao 1980, Teng 1982, Yuan 1989, Yang 1991, Hashimoto 1993), as illustrated in 1-3.[1]

1. Mandarin: 我 把/連 飯 都 吃 了。
1sg. obj. M rice all eat asp.
'I ate all the rice.'

2. Min: 伊將/對/給粒卵敲破去。
3sg. obj.M one egg break-go
'He broke an egg.'

3. Yue: 你 唔好 將/連 呢件 整壞。
you neg-good obj.M this-thing make-break
'You should not break this thing.'

Traditionally, researchers working on Chinese dialects focus much of their study on matching one type of OV order in Mandarin with that in the other dialects (Li 1959, Gao 1980, Yuan 1989 among others). For instance, a number of studies explore whether the S-*ba*-O-V construction (henceforth, the *ba* construction) used in Mandarin exists in the Min or Yue dialect. This kind of study is useful; however, it is not sufficient to reflect the fundamental difference or similarity among the dialects and, furthermore, to draw a typological conclusion of Chinese languages.

The present paper is a comparative study of the factors that determine the use of OV order in Mandarin, Min, and Yue dialects. All OV orders in these dialects, with or without subjects, have been studied. The results of this study show that the relative frequencies of OV orders in these three dialects are more or less the same, however, they differ from one another in terms of when objects need to be marked and which object marker is commonly used. Apart from these differences, I argue that the conditions which govern objects to be moved to preverbal position can be observed from three aspects: a) the syntactical consideration: the existence of a postverbal complement; b) the semantic consideration: the affectedness of objects/patients and the meaning of object markers; and c) the discourse pragmatic consideration: the contrast/listing function and the functions of promoting patients and/or demoting agents.

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[1] I wish to thank Lin Li-ching, Yeh Ling-hsueh, and Holly Lam for their help in verifying the Min and Yue data. I did not provide phonetic transcription in the examples because of my limited knowledge of the different pronunciations among the three dialects.

The organization of this paper is as follows: Section 2 provides the results of text counts of the relative frequency of OV orders among all transitive constructions in each of the three dialects. Section 3 discusses various semantic, syntactic, and discourse-pragmatic functions of different OV orders in these dialects. Finally, section 4 gives a conclusion and implications of this study.

2. RELATIVE FREQUENCY OF OV ORDERS IN THE THREE DIALECTS

The occurrences of OV constructions among all transitive clauses have been counted in naturally occurring texts[2] in the three dialects. The results of the counts are given in Table 1:

Category	Mandarin No. of Tokens	Min No. of Tokens	Yue No. of Tokens
VO	872 (91.02%)	853 (92.02%)	835 (93.40%)
OV w/obj. M	61 (6.37%)	35 (3.77%)	24 (2.68%)
OV w/o obj.M[3]	25 (2.61%)	39 (4.21%)	35 (3.91%)
Total	958 (100%)	927 (100%)	894 (100%)

Table 1: Relative frequency of OV order among all transitive constructions in the three dialects

The results in Table 1 are instructive in two ways: one is that the overall frequencies of OV constructions (both with and without an object marker) in the three dialects are similar: less than 10% of all transitive constructions (8.98% in Mandarin, 7.89% in the Min dialect, and 6.59% in the Yue dialect); the other is that in Mandarin, more than two-thirds (6.37%) of OV constructions have a marked object, while in the other two dialects, more than a half of the objects in OV constructions are NOT marked (4.21% in the Min dialect and 3.91% in the Yue dialect). Statistically, the difference between the number of the marked and unmarked objects in OV constructions of the three dialects is significant (chi-square test: $p<0.01$)

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[2] Data sources: Mandarin: 1) *'Hong Lou Meng'* 紅樓夢, 2) *'Chen Rong Zhongpian Xiaoshuo ji'* 諶容中篇小說集 (Rong Chen, 1983), 3) *'Gongkai de Neican' (Neican)* 公開的內參 (Kangkang Zhang *et al*, 1986). Min: 1) '*Chaozhou Fangyan*' 潮州方言 (Zhan 1959), 2) 'Spoken Amoy Kokkien' (Bodman 1955-1958), 3) *'Gushi'* 故事 in Dong *at el* (1967), 4) '*Shiyong Taiyu Huihua*' 實用台語會話 (Lin 1958). Yue: 1) Cantanese Primer (Chao 1947), 2) '*Kong Yiji*' 孔乙己 in Gao (1980), 3) '*Mazi Zuogong*' 馬仔做工 in Gao (1980) 4) '*San Zimei*' 三姊妹 in Gao 1980

[3] In this study, OV order without an object marker includes those constructions in which there is no syntactic subject; however, from context, one may figure out the semantic agent of the verb. For instance: 結婚的東西都准備好了。 'Everything for the wedding has been prepared.' As there is no syntactic subject in the sentence, theoretically, it is not appropriate to call the construction OV order (see detailed discussion of this respect in LaPolla 1991 and Xing 1993). I use OV order to refer to the illustrated sentence purely for the purpose of convenience.

Furthermore, objects in OV constructions of the three dialects are found to be marked differently: sometimes by *ba*, sometimes by *tsiang/tsueng*, *ka*, or *lian/lin*. This phenomenon has been noted in literature (e.g. Zhang 1972, Gao 1980, Teng 1982, Yuan 1989, Yang 1991, Hashimoto 1993); however, we do not know the distribution of the different object markers in the three dialects. The current study, based on the results of text counts of the frequency of OV constructions in the three dialects, found that in Mandarin almost all object markers are 把 *ba*, and a few of them are 連 *lian*. In Min and Yue dialects, on the other hand, the common object marker is 將 *tsiang/tsueng*; the Min dialect also uses 對 *tui* or 給 *ka* to mark objects, while Yue sometimes uses 連 *lin* to mark objects, as in Mandarin. These differences lead us to ask whether they reflect certain functional differences of OV constructions in the three dialects, or they are merely lexical variables. Hence, the following sections will discuss the USE of OV constructions (both with and without an object marker) in the three dialects and find out whether all OV constructions in the three dialects are governed by the same linguistic constraints.

3. CONDITIONS ON THE USE OF OV ORDERS

Cross-linguistically, word order alternation can be governed by a number of factors. Some languages (e.g. German, English) use different word orders to meet syntactic requirements (e.g. in German: main clause vs. subordinate clause); some languages (e.g. English, Hebrew) alternate word order due to discourse pragmatic consideration (e.g. old information vs. new information). In this section, I will examine the use of OV constructions in the three dialects from three aspects: syntax, semantics, and discourse pragmatics, to see what causes objects to be moved to preverbal position and whether we can draw a typological conclusion for the function of OV constructions in the three dialects.

3.1. SYNTACTIC CONSIDERATION

In section 2, it was shown that the relative frequency of OV constructions in Mandarin is 8.98% among all transitive constructions, in the Min dialect it is 7.89%, and in the Yue dialect it is 6.59%. These results give us a general idea of the distribution of OV constructions in the three dialects, yet they cannot tell us whether the 8.98% of OV constructions in Mandarin are the same type of constructions as the 7.89% of OV constructions in the Min dialect or the 6.59% of OV constructions in the Yue dialect. In literature, it is often mentioned (e.g. Zhang H. 1972, Zhang Z. 1983, Yuan 1989) that the *tsiang/tsueng* construction (one kind of OV constructions) in Min and Yue is equivalent to the *ba* construction in Mandarin. Here it is not clear to me whether 'equivalent' refers to the *structure* of *ba* and *tsiang/tsueng* constructions in the three dialects, or the *functions* of these constructions, or both.

In this section, I will provide evidence and argue that all *tsiang/tsueng* constructions in Min and Yue are structurally equivalent to *ba* constructions in Mandarin, but not all *ba* constructions are structurally and functionally equivalent to *tsiang/tsueng* constructions in Min and Yue. As far as the other OV constructions (with or without an object marker) are concerned, their structures and functions also differ in varying degrees among the three dialects. Let us first look at the following example:

4. 我把(將)這本書翻(譯)成中文了。
1st obj.M det.-cl. book translate-into Chinese asp.
'I have translated this book into Chinese.'

Sentence 4 has the structure: Subject+Object Marker+Object+Verb+Resultative complement. Textual analysis shows that if a verb carries a resultative complement, such as the one in 4, 'translate into Chinese', its object has to be moved to preverbal position and has to be marked no matter in which dialect or with which object marker.[4] In this case, both structure and meaning of the sentence in the three dialects are the same; the only difference is that Mandarin uses 把 *ba* as the object marker, while Min and Yue use 將 *tsiang/tsueng*. Interestingly, when the postverbal complement is other type (e.g. directional complement, double objects), the situation among the three dialects is complicated and needs to be discussed case by case.

Textual analysis reveals that all 將 *tsueng* constructions in Yue can be converted to 把 *ba* constructions in Mandarin without changing the meaning of the sentence. However, the reverse situation is not the same. That is, *ba* constructions in Mandarin are not always converted into *tsueng* constructions in Yue. Consider the following examples:

5. Mandarin: a. 他先把錢存入銀行。
he first obj.M money deposit in bank
'He deposit the money in the bank.'

b. *他先存錢入銀行。
he first deposit money in bank

6. Yue: a. 佢存住啲錢入銀行先。
he deposit money in bank first
'He first deposit the money in the bank.'

b. 佢將啲錢存入銀行先。
he obj.M money deposit in bank first
'He first deposit the money in the bank.'

Notice that the 把 *ba* construction in 5a can be converted into either 6a or 6b, both of which are grammatical, yet their structures are different. 6a has SVO word order and 6b has SOV order in which the object is marked by 將 *tsueng*. This seems to suggest that the flexibility of word order in Mandarin and Yue is different. We see that the Mandarin *ba* construction in 5a can be converted into two types of Yue constructions in 6, but the *tsueng* construction in Yue cannot be converted into the two types of Mandarin constructions as shown in 5. Previous studies (e.g. Xing 1993, Zhang 1972) and this study reveal that this is because in Mandarin an object CANNOT be located in postverbal position when there is a postverbal phrasal complement in the sentence, while in Yue it can. This is probably one of the reasons why the relative frequency of OV constructions in Yue (6.59%) is somewhat lower than that in Mandarin (8.98%).

Other evidence to support the assumption that the *ba* construction in Mandarin is not always equivalent to the 將 *tsiang* construction in Min is that many *ba* constructions, when converted into the Min dialect, may become OV constructions without an object marker. For instance:

7. Mandarin: a. 你把門關起來。
you obj.M door close-up-come
'You close the door.'

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[4] It should be pointed out this refers to the situation when the subject precedes the object (i.e. the SOV word order). The example in 4 can also be converted into an OSV word order in all three dialects in which the object does not need to be marked.

b. *你門關起來。
you door close-up-come

8. Min: a. 將個門(個伊)關起來。
obj.M door close-up
'You close the door.'

b. 你個門(個伊)關起來。
you door close-up
'You close the door.'

The Mandarin *ba* construction in 7a can be converted into two constructions in Min, as shown in 8a and 8b: one with an object marked by *tsiang*, the other with an object unmarked. But in Mandarin, only one construction in which the object is marked is allowed. This provides evidence that the Mandarin *ba* construction in 7 can have two interpretations in Min, while the two variats in Min can have only one interpretation in Mandarin. Therefore, we cannot say that the *ba* construction in Mandarin is always equivalent to the *tsiang* construction in Min. Examples in 7-8 also provide evidence that objects in Min are more free to be moved to preverbal position than those in Mandarin.

The results of a survey study of the difference between the two variants in 8 show that the two constructions differ in style and function: the one with a marked object is more formal than the one with an unmarked object; but the latter is more likely to have the function of emphasis than the former.

We have seen that OV constructions with a marked object are not always equivalent to one another structurally in the three dialects. In the following, I will show that OV constructions without an object marker are not always equivalent to one another in the three dialects either. Consider the following examples:

9. Min: a. 伊衫洗好著會來。
he shirts wash-finish can come
'After he finishes washing the shirts, he will come.'

b. 伊洗好衫會來。
he wash shirts finish can come
'After he finishes washing the shirts, he will come.'

10. Yue: a. ?佢衫洗好咗會來。
he shirts wash-finish can come

b. 佢洗衫好咗會來。
he wash shirt asp. can come
'After he finishes washing the shirts, he will come.'

11. Mandarin: a. ?他衣服洗好了會來。
he clothes wash-finish can come

b. 他洗好了衣服會來。
he wash-finish clothes can come
'After he finishes washing the clothes, he will come.'

According to Yang (1991), the OV order without an object marker is preferred in the Min dialect when there is a sentential complement, such as 會來 'will come' in 9a. In Yue and

Mandarin, however, the OV order is NOT preferred because of the very same reason, as shown in 10a and 11a; rather, the regular VO word order is likely to be used, as shown in 10b and 11b. I assume that this is associated with the principle of sequencing in Mandarin and Yue. To prove this, however, requires further investigation.

To summarize, I have shown in this section that OV constructions with a marked or an unmarked object in the three dialects are not always structurally equivalent to one another. The results of this study suggest that the OV construction must be used in Mandarin when there is a postverbal phrasal complement in the sentence, but not in Yue. On the other hand, if there is a sentential complement, the OV construction is preferred in Min, however, this is not the case in Yue nor in Mandarin. Another way to state this is that the scope of OV order with an object marker is syntactically wider in Mandarin than in Yue, but the scope of OV order without an object marker is syntactically wider in Min than in Yue and Mandarin.

3.2. SEMANTIC CONSIDERATION

In addition to the syntactic factors discussed in the preceding section, the use of OV constructions (with or without an object marker) in the three dialects is also found to be affected by different semantic factors. In literature, it is often mentioned that the verb in the OV construction (with an object marker) expresses a 'disposal' action (Chao 1968, Zhang 1972, Li 1974, Gao 1980, Li and Thompson 1981 among others) and has to convey a perfective or transitive meaning (Hopper and Thompson 1980, 1984; Mei 1981; Jin 1993). For instance:

12. Mandarin: a. 他把杯子打破了。
he obj.M glass hit-break asp.
'He broke the glass.'

b. *他把杯子打。
he obj.M glass hit

c. 他打破了杯子。
he hit-break asp. glass
'He broke the glass.'

13. Min: a. 我將碗糜食了。
I obj.M bowl-rice eat-finish.
'I ate a bowl of rice.'

b. *我將碗糜食。
I obj.M bowl rice eat

c. 我食了碗糜。
I eat asp. bowl rice
'I ate a bowl of rice.'

14. Yue: a. 你想將人嚇死咩。
you want obj.M people frighten-die excl.
'You want to frighten people to death?!'

b. *你想將人嚇咩。
you want obj.M people frighten excl.

c. 你想嚇死人咩。
you want frighten-die people excl.
'You want to frighten people to death?!'

In 12-14, the verb has some kind of disposal meaning, or, rather, the object is somewhat affected by the action of the verb. In addition, all three sentences have a word or morpheme immediately after the verb expressing the perfective aspect of the action of the verb, i.e., 打破了 hit-break, 食了 eat-finish, 嚇死 frighten-death. Without the perfective morpheme, these sentences would be unacceptable, as shown in 12b, 13b and 14b. This provides evidence that the verb of OV constructions with an object marker needs to carry a perfective aspect and the object is affected by the action of the verb. However, no evidence suggests that when the verb conveys the meaning of disposal, OV order HAS to be used, because the basic VO order is perfectly fine, as shown in 12c, 13c, and 14c. The conditions that govern the choice of OV order or VO order were found to be associated with discourse pragmatic factors, which will be discussed in detail in 3.3.

The results of the previous studies are informative in the semantic function of the verb in OV constructions with an object marker, *ba* or *tsiang/tsueng*. However, there has not been much study of the semantic consideration of the remaining OV constructions, i.e. those without an object marker or those with other object markers such as 連 *lian/lin*, 對 *tui*, 給 *ka*, so we do not know whether the verbs of the OV constructions without an object marker in the three dialects are the same as those OV constructions with an object marker, *ba/tsiang*. My own study (1993) of Mandarin texts and the results of this study show that the verb of OV constructions without an object marker or with some other object markers,[5] 連 *lian/lin*, 對 *tui*, 給 *ka*, do not always convey the meaning of disposal, as shown below:

15. a. 這句話我喜歡。
this sentence I like
'This sentence, I like'

b. 他連那句話也喜歡。
he emph.M that sentence like
'Even that sentence, he likes.'

c. *我把(將)這句話喜歡。
I obj.M this sentence like

d. *他那句話喜歡。
he that sentence like

The sentence in 15a has an OSV structure with no object marker. Notice the verb 喜歡 'like' in it is stative and does not have the disposal meaning, but it is grammatical. Adding the object marker 連 *lian* when the sentence is converted into an SOV order is also acceptable, as shown in 15b; however, adding the object marker *ba/tsiang/tsueng* or leaving it bare makes it unacceptable, as shown in 15c and 15d. This is true of all three dialects.

We see the semantics of verbs in OV order among the three dialects is more or less the same. That is, when the object is marked by *ba* or *tsiang/tsueng*, the verb is most likely to express the meaning of disposal, or the object is mostly likely to be affected; when the object is unmarked or marked by another form, however, the verb does not have to have the disposal meaning.

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[5] 'Object marker' here broadly refers to any markers used before objects, even though 連 *lián* in Mandarin could well be an emphatic marker and 給 *ka* in Min be a dative marker, etc.

At this point, it becomes interesting to see whether objects and object markers in OV order of the three dialects have the same semantic function. As it is known, the prototypical semantic relationship between a verb and an object is that the verb projects an action to the object and the object functions as a receiver or patient of the projected action, so it is a give-take relationship between them. Object markers, on the other hand, do not normally have any semantic nor pragmatic function themselves, rather they only serve to distinguish the relationship between noun phrases and verbs (see Comrie 1981:117-121). Investigation of objects and object markers in the three dialects reveals that both objects and object markers do not always retain the prototypical functions mentioned above and sometimes differ from one another among the dialects. Consider the following examples:

16. Min: 我將咩脚踏伊二擺。
I obj.M foot step he/him two time
'I stepped on him twice with my foot.'

17. Mandarin: 他把孩子餓死了。
he obj.M child starve-die asp.
'He caused (his) child to starve to death.'

18. Yue: 你將佢激到吹鬚碌眼。
you obj.M he/him angry to blow-bear-stare-eye
'You caused him to be angry to the extent that he frothed at his mouth and glared with rage.'

In 16-18, the object marker is either 把 *ba* or 將 *tsiang/tsueng* depending upon the dialect, and all noun phrases, 咩脚 'foot', 孩子 'child', and 佢 'him' after the object marker, are not semantically the receiver/patient of the actions of the verbs, 踏 'step', 餓 'starve', and 激 'make...angry' respectively; instead, they are the receiver/patient of the object marking *ba* or *tsiang/tsueng*, serving an instrumental function as in 16 or a causative function as in 17 and 18. According to my previous study (1993:142), few *ba* constructions in Mandarin have the causative or instrumental function in modern texts, however, historically it is not uncommon for *jiang* to serve that function. In comparison, *tsiang* constructions in modern Min (e.g. Chaozhou dialect), according to Li (1959:256), OFTEN have the instrumental function, as shown in 16. This seems to suggest that the functional difference between *ba* in Mandarin and *tsiang* in Min is reflected in the process of *ba* and *tsiang*'s grammaticalization. *Ba* in Mandarin represents its latest function (e.g. object marker) in the disposal form, while *tsiang* in Min represents the relatively old function (e.g. instrumental marker) of the disposal form in Chinese.[6] If this is true, it helps us understand better why the relative frequency of the *tsiang* construction in Min (and possibly Yue) is lower than the *ba* construction in Mandarin. Logically, the chances to use them as object markers are far more frequent than as instrumental or causative markers.

As far as the semantic function of the other object markers are concerned, it is common for 連 *lian/lin* and 對 *tui* to be used as an emphatic marker and 給 *gei/ka* used as a dative marker. As this subject itself is big enough to write a separate paper, I will not discuss it in detail. Interested readers can consult Li (1959), Teng (1982), Xu (1990), and Cui (1993).

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[6] In fact, this is part of the reason why the *jiang* construction in Mandarin is rarely used in modern texts. Detailed discussion of this subject can be found in Xing (1993).

In this section, we have discussed the semantic function of verb, object, and object marker in OV constructions in the three dialects. Evidence shows that even though the verbs in OV constructions with an object marker, *ba* or *tsiang/tsueng* , in all three dialects are most likely to convey the meaning of disposal, the verbs in OV constructions without an object marker *ba/tsiang/tsueng* or with other object markers are not always the case; they can express a stative situation, such as 喜歡 'like'. Other results suggest that the semantic function of *ba* and *tsiang/tsueng* phrases vary among the three dialects. *Ba* in Mandarin almost exclusively serves as an object marker, so the noun phrase immediately following it is almost always the receiver/patient of the action of the matrix verb. *Tsiang* in Min (maybe in Yue), on the other hand, is often used as an instrumental or a causative marker, hence the noun phrase immediately following it is not the receiver/patient of the action of the matrix verb. I argued that this difference between Min/Yue and Mandarin represents the different functions of *ba/tsiang/tsueng* phrases in the course of their grammaticalization, which, in turn, explains the frequency difference among *ba* and *tsiang/tsueng* constructions in the three dialects.

3.3. DISCOURSE PRAGMATIC CONSIDERATION

We have seen that both syntax and semantics can affect the choice of word order in all of the three dialects. Apart from these two factors, this study also found that there are a number of discourse pragmatic factors which are essential in distinguishing word order variants in the dialects studied. Hence, this section will focus on which discourse pragmatic factors are important and how they constrain the use of different word orders in the three dialects.

Textual analysis shows that among other things, the motivation for using OV order rather than VO order in Mandarin, Min, and Yue is to put relatively important objects in preverbal position. Now the question is how we can tell whether objects are important. In the following, I will provide evidence showing: 1) The objects in OV constructions with a subject tend to be definite and important. As definite nouns refer to entities that have been mentioned in previous discourse, coding tokens for definiteness helps us to identify which noun phrases are relatively more common and hence more important in discourse than others. 2) OV constructions without an object marker tend to have emphatic function: contrast/listing. Presumably, if an object is contrasted/listed, it is more important than other entities in the discourse.

3.3.1. DEFINITENESS

Definiteness is not a new term in the study of OV order in Chinese. In fact, it can be dated back to Mulie (1932) who first suggests that preverbal objects in Chinese are definite. In the last two decades, two groups of researchers provide convincing supporting evidence for that suggestion: one group is Li and Thompson, and the other is Sun and Givón. Li and Thompson (1974a, 1974b, 1975a, 1981) claim that SVO order characteristically codes indefinite objects and OV order codes definite objects; however, they do not give quantitative data supporting this claim. Sun and Givón's text count (1985:336-337) indicates that 49% of the objects in VO order are indefinite, while roughly 80% of the objects marked by '*ba* or '*jiang*' are definite in OV order. Both Li and Thompson's and Sun and Givón's studies reveal a general tendency regarding the definiteness of subjects and objects in the SVO and OV constructions. However, it is not clear in either Li and Thompson's or Sun and Givón's study whether OV order includes those constructions without a subject. In addition, all of these studies are based on Mandarin Chinese, not other dialects.

To code definiteness in Chinese is not as easy as in English, since there is no definite article in Chinese corresponding to the English 'the' (see Givón 1978, 1984 for the definition of definiteness in English). In Mandarin, some noun phrases (NP) have demonstrative modifiers, *zhè* 'this' and *nèi* 'that', by which we know they are definite; however, other NPs do not have any overt marker to show whether they are definite or not, so they must be determined from context. Xing (1993:22) codes all NPs (subjects and objects) in the SVO and OV constructions (both with and without an object marker and a subject) collected from short stories and novels as either definite or indefinite by the following definition:

i. It is mentioned in the preceding discourse and it is known to both speaker(s) and listener(s).

ii. It is not mentioned in the preceding discourse, but it is known to both speaker(s) and listener(s), because it is uniquely identifiable. NPs, such as *taiyang* 太陽 'the sun' and *yueliang* 月亮 'the moon', belong to this category.

iii. 'Inferrible' noun phrases, such as 'his head', 'my apartment', etc (see Prince 1981)

The results of Xing's text counts show that subjects in all constructions are definite more than 85% of the time. Objects, however, do not always tend to be definite or indefinite in OV or VO order; rather, they are split by whether the OV construction has a subject and an object marker. That is, the object in the OV order with a subject and an object marker is much more likely to be definite (80%) than those in VO order and the OV order without a subject and an object marker (53% for both cases). Compared with Sun and Givón's findings (1985) and Li and Thompson's findings (e.g. 1981), Xing's results are more detailed and, therefore, more informative.

Using the same definition given by Xing above, I have coded all NPs of OV constructions in the Min and Yue texts studied for this paper as either definite or indefinite. The results are as follows: the objects in the OV order with a subject and an object marker in both dialects tend to be definite (86% in Min and 90% in Yue), while those in the OV order without a subject and an object marker do not have that tendency. Notice that these results are the same as those found in Mandarin by Xing (1993), even though the relative frequency of the OV order with an object marker in the three dialects varies as discussed earlier. In this case, I conclude that in Chinese OV order is likely to be used under two circumstances: 1) when there is a subject in the target sentence and the object is more important (e.g. definite) in discourse; and 2) when there is no subject in the target sentence, in which case the object does not have to be definite. A natural question to ask at this point is that if the object is not definite, why is OV order used, instead of the regular VO order? The following section makes an effort to answer this question.

3.3.2. EMPHATIC FUNCTION: CONTRAST AND LIST

In literature, there has not been much research comparing the discourse pragmatic functions of different word orders in Chinese, and even less research comparing the functions of different orders in the three dialects. However, there have been a few studies of the functions of the OV order in which the object is marked by *ba/jiang* (e.g. Sun and Givón 1985, Tsao 1987, Hu 1993). A claim made by Sun and Givón (1985) is that most OV orders (with or without the object marker *ba*[7]) have the contrastive/emphatic function. In this section, I will first argue that Sun and Givón's claim is not tenable; they over-generalize the function of OV orders in

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[7] It is not clear whether OV here refers to SOV, OSV or OV (without any subject), or all of these.

Mandarin. Then, I will provide evidence of the constructions that do have contrast/emphatic function in the three dialects.

Sun and Givón (1985), to my knowledge, are the first to discuss the correlation between a certain discourse function and the use of a certain construction in Chinese. The main focus of their study is to investigate the discourse function of different word orders in Mandarin Chinese based on recorded speech and written texts. One of the claims they make is that 'the functional distribution of the OV construction, both with and without the OM (object marker=*bǎ*), strongly tags it as a marked, specialized, contrastive/emphatic discourse device' (1985:348). This claim poses a number of problems.

First of all, Sun and Givón, like other researchers (Kuno 1973, Chafe 1976, Givón 1984 among others), do not define 'contrast'. They use a text count method called Potential Referential Interference (PRI) to diagnose the emphatic/contrastive nature of constructions. The problem with this approach is that the PRI measure does not seem to be objectively applicable to naturally occurring data (see detailed critique of this matter in Myhill and Xing 1993). The second problem is that their claim for the correlation between the function of contrast and OV constructions is overstated in that we can easily find counter-examples in any naturally occurring texts. Consider the following examples:

19. 護照批下來了。 (*Chen Rong*, p. 349)
passport issue come asp.
'My passport has been approved.'

20. 你且把園門關了。 (*Honglou Meng*, p. 168)
you just obj.M garden door close asp.
'You go and close the door of the garden.'

Both 19 and 20 are OV constructions; the difference is that one has an object marker and the other does not. Sentence in 19 is used when a person tells her best friend that her passport has been approved and she is leaving in a few days. In this case, there is no constituent, either in the preceding or the following discourse, with which the NP 護照 'passport' or the verb 批 'approve' is contrasted. The speaker is simply telling her friend a fact. Hence this OV construction is not contrastive. This is also true for example 20, which is used when a man orders one of his servants to close the door of a garden. In the surrounding context, we do not see any other NPs compared with 園門 'door of a garden', nor any verb compared with 關 'close', so that sentence 20 is not used contrastively either. If Sun and Givón consider both 19 and 20 as contrastive constructions, it is not surprising to see that their results support their claim (1985:348) that among other things the *ba* construction is almost always used contrastively.

Aware of the problem with Sun and Givón's study, I propose an alternative analysis. That is, in Mandarin the OV order with an object marker *ba* does not have the emphatic function: contrast/listing; only the OV order without an object marker *ba* does. The latter type of OV orders includes (*lian*)-OSV, S-*lian*-OV, and OV constructions. The Min and Yue dialects, furthermore, exhibit a similar pattern: OV constructions with the object marker *tsiang/tsueng* do not have the contrast/listing function, while the remaining OV constructions often do. In the following, I will begin by defining the terms 'contrast' 'listing'.[8] Then evidence for the correlation of the contrast and listing function and the use of the OV construction in the three dialects will be given.

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[8] In this paper, I will not define the term 'emphasis' because it seems to me that emphasis is a general term which can be specified as 'contrast' and 'list'.

DEFINITION. 'Contrast' and 'listing' are two distinct discourse devices, which have similar functional domains, as illustrated in 21 and 22.

21. 傅關掉了錄音機，打開了電視。 (*Neican*, p. 10)
name turn off asp tape recorder, turn on asp television.
'Fu turned off the tape recorder and turned on the television.'

22. 她沒有幻想過飛來的愛情， (*Chen Rong*, p. 317)
she not fantasize asp. fly-come poss. love
也沒有幻想過常人的幸福。
too not fantasize asp.ordinary people poss happiness.
'She has never fantasized about any unexpected love, nor has she fantasized about ordinary people's happiness.'

Both 21 and 22 have the function of emphasizing two things, the former by contrasting, the latter by listing. This is probably why some linguists (e.g. Givón 1988) do not make distinctions between 'contrast' and 'listing'. In literature, the term 'contrast' has often been discussed and applied to different languages. It is known that different languages have different means of expressing such a function. For instance, some languages (e.g. English) can express contrast either by intonation, i.e. high pitch (Chafe 1976), or by using different word order (Givón 1984), while other languages, like Japanese and Korean, use a particle, [*wa* and *(n)un* respectively], to indicate 'contrast' (Kuno 1973, Hong 1985, Downing 1987, Hinds 1987, Hook 1987, Ueno 1987, Isoe 1992). 'Listing', on the other hand, is rarely mentioned in literature: only Schiffrin (1992), to my knowledge, talks about 'listing' in recorded conversations in English and makes an effort to categorize the items in a list.

All of these studies are valuable in working out the cross-linguistic pattern of contrast and listing functions. However, when linguists (Kuno 1973, Chafe 1976, Givón 1984 among others) discuss 'contrast', they either do not define this term at all (e.g. Kuno) using isolated examples to illustrate their points, or they define it so vaguely that it is impossible to apply to real data. For instance, an example that Chafe (1976) uses is 'Ronald made the hamburgers'. According to him, this sentence can represent either 'contrast' (similar to my 'listing') or 'double contrast' (similar to my contrast) depending upon which element receives a higher pitch. If RONALD receives the highest pitch and stress and the reminder of the sentence is low pitched, it is 'contrastive'. He states that:

> 'What is conveyed by such a sentence is the speaker's knowledge that Ronald, as opposed to other possible candidates the addressee might have had in mind, is the right selection for this role.'

If both RONALD and HAMBURGERS receive high pitch, Chafe (1976:35) explains:

> '...it is the pairing of these candidates for these roles that is being asserted. That is, if we are to take possible pairings of agents with patients of MAKE in this particular situation, one of the correct pairings (the speaker asserts) is RONALD with the HAMBURGERS. (Perhaps SALLY made the SALAD but RONALD made the HAMBURGERS.)'

This seems extremely difficult or impossible to apply to other languages in which intonation and pairing patterns are different from English. However, it does give us some idea of possible contrastive expressions in English. With certain modifications, it should be applicable to other languages as well.

Myhill and Xing (1992) make a preliminary effort in this respect. The definition they offer for 'contrast' generally corresponds to what Chafe refers to as 'double contrast'. They differ from Chafe in that they give further detailed descriptions of the properties of contrasted/listed entities (e.g. NPs and Vs) in a given construction. They point out that it is necessary that contrasted or listed NPs refer to entities which are elements of a SET[9] and the verbs in such a contrasted or listed pair must have either essentially the OPPOSITE meaning or essentially the SAME meaning. In addition, they discuss different types of contrast, such as 'verbal/non-verbal contrast' and 'implicit/explicit contrast'. Verbal contrast refers to contrastive constructions which have their verbs contrasted, as illustrated in 21, while non-verbal contrast refers to constructions which have verbs with the same meaning but have their agents, patients, themes, etc., contrasted, as illustrated in 23:

23. 康把一迭錢塞到了服務員手中。 (*Neican*, p. 158)
name one cl. money stuff to asp waiter hand middle
陸把錢塞到他另外一只手中。
name money stuff to him the other hand middle
'Kang stuffed a wad of money into one of the waiter's hands,
Lu stuffed some money into his other hand.'

Explicit contrast refers to cases where both constructions in a pair are overt, as in the contrast example given in 21. Implicit contrast, on the other hand, refers to pairs which have only one construction overt, as illustrated in 24, and they often have words such as 連/對 'even', 都 'all', 也 'also, too', 只 'only', etc., as a signal for contrast or listing.

24 你念了大學，面都見不着了。 (*Neican*, p. 9)
you study asp. college face all see neg. get asp.
'Since you entered the college, your face is hardly seen.'

In 24, the OV construction without an object marker (in the second clause) is an implicit contrastive construction. According to the context, the sentence can be interpreted as '(Before you entered the university) your face was often seen, but after you entered the university, your face is hardly seen anymore', so what is implicitly contrasted is that your face 'is seen' vs. 'is not seen'.

The major difference between 'contrast' and 'listing' is then as follows: In a pair of verbal contrastive sentences, ONE or more non-verbal constituents are in a set relationship, and the verbs are OPPOSITE in meaning, as exemplified in 21, in which two non-verbal constituents form a set, 'tape-recorder' vs. 'television', and the two verbs are opposite in meaning, 'turn off' vs. 'turn on'. In a pair of non-verbal contrastive sentences, TWO or more non-verbal constituents form a set and the verbs are the SAME in meaning, as exemplified in 23. In a pair of listing constructions, the verbs must be either identical or have essentially identical meanings and only ONE pair of non-verbal constituents are in a set relationship, as exemplified in 22.

The current study basically follows Myhill and Xing in defining the terms 'contrast' and 'listing', except that I have modified the cases in which a set may be constituted so that the terms may be easier to apply to cross-linguistic phenomena. In the following, the revised criteria for a set are given:

(1) Any pair of elements which are represented as complementary parts of a whole (e.g. this vs. that; East vs. West) can constitute a set.

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[9] The term 'set' was first introduced in analyzing word order variation by Ward (1985).

(2) Any pair of elements which belong to the same semantic domain (e.g. musical instruments: piano vs. violin, or siblings: brother vs. sister) can constitute a set.

(3) Any pair of elements which generally do not belong to the same semantic domain, e.g. money vs. food, but which under specific circumstances function as if they do (when both are valuable things or necessary to life) can be considered as a set.

(4) Any two or more people who live, travel, talk, etc., together can constitute a set, while they are together.

(5) Any pair of elements having a parallel relationship to the members of the set (e.g. the daughters of two people who live, travel, talk, etc. together) can constitute a set as well.

Given these five criteria, along with the basic property of 'contrast' (e.g. to contrast two or more verbs or nonverbal entities in a set relationship) and 'listing' (e.g. to list two or more entities in a set relationship), one should be able to code 'contrast' and 'listing' constructions from any text in any language.

CORRELATION. Given the above definition, the OV constructions in the three dialects have been coded as either contrast/listing or non-contrast/listing. The results are given below:

Category	VO	OV w/o *ba/tsiang*	OV w/ *ba/tsiang*
Mandarin	unlikely	likely	unlikely
Min	unlikely	likely	unlikely
Yue	unlikely	likely	unlikely

Table 2: Likelihood of the contrast/listing function in the three dialects
*OV w/o *ba/tsiang* includes SOV, S-連/對/給-OV, OSV, and OV constructions.

Table 2 shows the likelihood of the contrast/listing function in the three dialects. From the table, we see that in all three dialects OV orders without the object marker *ba* or *tsiang/tsueng* are likely to have the contrast or listing function, but the other constructions are not. One may have realized that the OV order without a *ba* or *tsiang/tsueng* varies slightly among the dialects, so the contrastive and listing OV construction should also vary among the three dialects. This is true; however, it does not affect the general tendency of OV orders without an object marker being used contrastively. Evidence for this is that Mandarin and Yue often use 連 *lian/lin* to express implicit contrast, while Min tends to use 對 *tui* to convey the similar meaning, as illustrated below:

25. Mandarin: ...連手都抬不起來。 (*Chen Rong*, p.352)
even hand raise-not-up-come
'...even her hand cannot be raised.'

26. Yue: 連夾萬鎖匙佢都交畀你，... (Gao Huanian, p. 225)
even safe key he give to you
'Even the safe's key, he gave to you, ...'

27. Min: 對伊個頭個伊斬出來。 (Li Yongming, p. 256)
even its head cut-out-come
'Even its head was cut off.'

The object marker 連 / 對 in 25-27 sometimes can be omitted and the remaining sentences still have the contrast or listing function. This is especially true of spoken discourse when extra-linguistic marks, such as high pitch, are added to the sentences. This supports the assumption that OV constructions without an object markers are associated with contrast/listing functions.

It should be made clear that 'likely' in Table 2 means that certain types of OV constructions are GENERALLY associated with the contrast/listing function, although they are not ALWAYS used in that way and it is certainly not the case that all OV constructions with the object marker *ba* are associated with the contrastive function, as claimed by Sun and Givón (1985). The non-contrast/listing OV construction without an object marker *ba/tsiang/tsueng* and a subject is found to have the function of demoting agent and/or promoting patient. Consider the following examples:

28. Mandarin: 學院的大門也關了。
college poss. big-door also lock asp.
'The university's entrance door is also locked.'

29. Min: 衫甲伊收起來。
shirt collect-up-come.
'The shirts should be put in order.'

30. Yue: 呢口的屋都起好 咗 嘞。
these house all build-finish asp.
'All these houses have been built.'

All of the three sentences given above do not have an agent/subject, nor an object marker, nor the contrast/listing function. The OV order[10] is used for one or more of the following reasons: 1) to leave out the subject/agent either because they are not important in the discourse or the speaker/writer does not know who the agent/subject is (e.g. examples 28 and 30), or the speaker/writer knows the agent/subject, but does not want to mention it explicitly (e.g. example 29); 2) to put the patient/object in a relatively more important position (e.g. examples 29 and 30). Notice that all these reasons are closely associated with the pragmatic functions of prototypical passive constructions (see Shibatani 1985, 1988; Comrie 1988; Givón 1990), yet all the three constructions in 28-30 do not have any passive markers, such as 被 *bei*. Because of this discrepancy of form and function, some researchers treat them as passives (e.g. Zhang Zhigong 1956, Wang Li 1957b, Gao 1980), others consider them as disposal forms (e.g. Yuan 1989, Mei 1990). I take the stand of the first group of researchers because of my belief that all linguistic forms serve for functions, not vice versa; so if an OV construction without a subject/agent and an object marker has the function of passive constructions, it is a passive construction. I conclude that in the three dialects when OV orders do not have an object marker *ba* or *tsiang/tsueng*, they serve, at least, one of the two purposes: emphasis or promoting patients and/or demoting agents.

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[10] As mentioned earlier in footnote 3, for the convenience of readers the term 'OV' is used to refer to the constructions as in 28-30 throughout this paper. Theoretically, it is not appropriate to use that term, because if the NP before the verb is the object, where is the subject? I use the term 'Patient-Verb' instead to describe the construction concerned in my dissertation.

4. CONCLUSION

We have discussed the conditions of word order variation in Mandarin, Min and Yue dialects from three aspects: syntactic, semantic, and discourse pragmatic. Evidence shows that the syntactic and semantic constraints on the flexibility of OV order in the three dialects vary, however, the discourse pragmatic motivations for using OV constructions in the three dialects are more or less the same.

The major syntactic constraint on the use of OV order in the three dialects lies in the existence of postverbal complements: in Mandarin, OV order, most likely with the object marker *ba*, must be used when there is a postverbal phrasal complement, but this is not true of the Yue dialect. Furthermore, when there is a sentential complement, the Min dialect prefers OV order, while the other two dialects do not. As a result of these differences, some OV constructions WITH an object marker in Mandarin become OV constructions WITHOUT an object marker when converted into the other two dialects and vice versa. I argued that these syntactic differences among the three dialects trigger some of their semantic differences. The OV construction with the object marking *ba* in Mandarin, the so-called disposal form, is not always equivalent to the OV construction with the object marker *tsiang/tsueng* in Min and Yue. They differ both in function and style: *Ba* in Mandarin is almost always used as a grammatical marker without any semantic implication, but *tsiang* in Min is often used as an instrumental marker. Stylistically, *tsueng/tsiang* constructions in Min and Yue are more formal in discourse than the *ba* construction in Mandarin. I suggested that these semantic and stylistic .differences between *ba* and *tsiang/tsueng* represent different facets of *ba* and *tsiang/tsueng* in the course of their grammaticalization.

Interestingly, all those syntactic and semantic differences do not affect the similarity of the discourse pragmatic function of OV constructions in the three dialects. We have found that OV orders without an object marker *ba* or *tsiang/tsueng* in all three dialects tend to have the emphatic function: contrast or listing, but those with the object marker *ba* or *tsiang/tsueng* do not have that tendency. Further study of the non-emphatic OV constructions without a subject and the object marking *ba* or *tsiang/tsueng* reveals that they are used to demote agents and/or promote patients.

All these results are instructive and helpful in understanding the function and typology of word orders in Chinese. They provide language specific evidence regarding the motivations for using OV constructions in the three dialects. Future research can compare the findings of this study with those from studies of other languages so as to develop a theory of this aspect of universal grammar.

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周小兵: 漢語"連"字句

ASPECTS OF PROSODY IN MANDARIN DISCOURSE

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INTRODUCTION

The importance of intonation in language is gradually becoming more recognized among linguists, psychologists, and cognitive scientists, and the notion that intonation is comparable to syntax, phonology, and semantics in its functions in language is now being considered. A clearer understanding of intonation and how it is affected by, affects, or substitutes for different syntactic structures, and how intonation can modify or even reverse the surface semantic meanings of speech, will help resolve and fill in many gaps in current linguistic theory.

Intonation is an essential component of meaning. It is important to speech because it helps to make things distinguishable. Intonation conveys differences among different mental or psychological states, speech acts, and semantic concepts. In normal speech, variations in cognitive states, focus, and in signals of relative importance are critical to successful communication. In conversation, we are not only interested in the facts of topics, but also have a critical interest in the judgements and attitudes of the other conversational participants. Because of its multi-dimensional nature, intonation provides an efficient way to express complex meanings and ever-changing variations in attitudes and states, and is therefore efficient in the transmission of differentiated information.

Recent research has also shown that many characteristics of intonation are similar across languages (Bolinger, 1989; Fonagy, 1987; Fernald, 1991). The expression of emotional and cognitive states through intonation is ever-present throughout language, and may have underlying bases of evolutionary adaptation, speech mechanism structure, and neurological abilities and constraints. A strong case for a universal basis for intonation would be considerably enhanced if patterns of intonation in a tone language such as Chinese could be shown to share similar intonational characteristics with non-tonal languages.

RESEARCH PROCEDURES

For this study, I recorded two sets of spontaneous natural discourse data in home settings between native speakers of Chinese. Each recorded conversation is about 3 hours in duration, totaling 6 hours of speech altogether. All of the informants are female speakers from Taiwan. Speech data were first analyzed perceptually, and then about 60 minutes of the speech data were digitized and analyzed acoustically using the WAVES speech software at the Phonetics Lab of Stanford University.

My approach differs from previous research on intonation in that I take an integrated approach of analyzing intonation from a broader perspective of cognitive elements and discourse structure. Previous research has tended to concentrate on read speech and short sentences constructed in an experimental setting. These types of studies often provide interesting but isolated results. In real-life speech all of the elements of prosody are interwoven together.

Artificially separating and isolating just one parameter misses the relationships among all of these elements, and may distort the actual influence of even one single variable. This often results in oversimplification and over-generalization of research findings. In addition, there may be artifacts arising from the artificial production situation.

In spontaneous discourse, there are frequent false starts, hesitations, repetitions, and other common speech production phenomena. Relationships among speakers are reflected in complex patterns of participant interactions and signalling of cognitive states. The development of the discourse itself undergoes rapid changes and frequent topic shifts, and rhythmic and emotional elements are very common. All of these things are reflected in the intonational patterns of natural discourse. Many intonational phenomena are likely to occur only in spontaneous speech, and are very difficult to imagine without looking at natural discourse itself. Because of these considerations, it is crucial to use natural spontaneous discourse data in order to gain a full understanding of how intonation functions in discourse.

In this paper, our discussion is concentrated on three aspects of intonation in Mandarin: Focus, cognitive-affective states, and discourse phenomena.

CHINESE TONAL SYSTEM

Mandarin Chinese has 4 lexical tones and a neutral tone. Each syllable is associated with a specified tone and pitch difference is used to distinguish meaning. The standard Chinese tonal system and pitch values (Chao, 1968) are:

	Tone 1	¯	high and level	55
	Tone 2	´	rising	35
	Tone 3	ˇ	fall-rise	214
	Tone 4	`	falling	51
*	Tone 0		variable	

ASPECTS OF INTONATION

Focus and Non-focus

Focus or stress is related to the importance of topic and is often used as a form of cognitive emphasis. In discourse we often want to signal the judgement of importance which we attach to specific linguistic units, and we stress according to the relative importance of that unit in the discourse hierarchy.

In my data, I have found that focus in Chinese is often signalled by using full tone contour and by expanded pitch range. This is in agreement with Chao's observations (Chao, 1968). In In speech, however, pitch, amplitude and duration are often coupled together and therefore focused words often have a higher amplitude and lengthened duration as well. Moreover, focus is often accomplished by specific rhythmic patterns and voice quality changes.

In Chinese, focus is manifested differently with different tones. With focus, specific distinguishing characteristics of tones are often exaggerated to achieve prominence. For example, focus is often achieved in 1st tone words by a prolongation or sustainedness of the syllable. For 3rd tone words, focus is commonly expressed by lowness or by dipping lower in pitch, while 4th tone focused words are characterized by a large pitch range and downward force.

Focus-signalling is related to semantics and cognitive processing of new and old information. In my data, infrequently used or newly encountered words tend to receive emphasis to alert or direct the hearer's attention to an unusual item. Systems of focus and non-focus are cognitively more efficient since they allow the hearer to alternate between periods of high attention and relative relaxation.

In contrast to emphasized words, deemphasized words tend to lose their lexical tone structure, and are often said at a faster rate due to their unimportant status. These unimportant words often change their shapes because of interpolation and accommodation to neighboring syllables and the surrounding environment. Sometimes non-focused words have a specific discourse function, therefore take on a specific intonation appropriate to that discourse function.

Even focused words can change their form under specific emotional influences. In this example [you3 o0 hao3 duo1 o0], 1st tone *duo1* in the phrase *hao3 duo1 o0* "a whole lot" takes on a dramatic arched rise-fall form because of the exaggerated emphasis. This arched rise-fall shape is typical of situations of exaggeration.

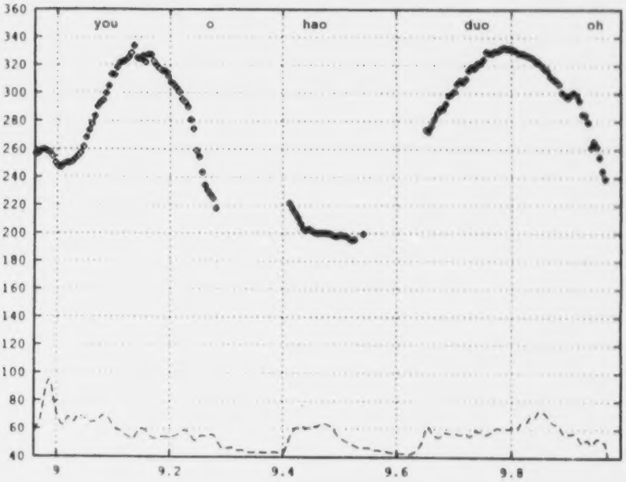

Figure 1: you3 o0 hao3 duo1 o0
[Yeah, a whole lot]

Focus and non-focus are essentially iconic in nature. That is, we often spend more time on things that are important to us and spend less time on unimportant things. For this reason subordinate clauses and parentheticals are often said at a faster rate and a lower pitch level. In the example of Figure 2: [bu2guo4 ta1 li3mian4 you3 san1shi2 ji3ge0 college] "But they have over 30 colleges", 1st tone *san1* changes its tone shape dramatically from a level pitch to a strong fall-rise shape due to emphasis on the large number of colleges. Within the phrase *san1shi2 ji3ge0*, *san1* has the most emphasis and so is the longest, and the subsequent less emphasized syllables are progressively shorter. The emphasis in this case is also strengthened by the consonantal lengthening of the fricative sounds in both *san1* and *shi2*. In my data, it is found that speakers commonly use lengthening of the fricative consonant to express emotional intensification. In these cases, the length of the consonant commonly takes up more than one-half of the total syllable duration.

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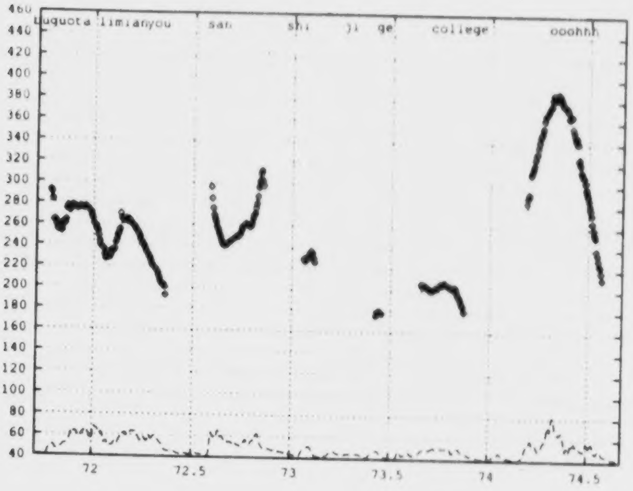

Figure 2: bu2guo4 ta1men0 li3mian4 you3 san1shi2 ji3ge0 college o0
[But they have over thirty colleges Oh]

Elements of prosody are often interwoven together. In the example of Figure 3: [ke3shi4 mei2you3 leng3qi4] "But there wasn't any air conditioning", focus is achieved by modifications in duration, pitch range, and amplitude. The pitch level of *ke3shi4 mei2you3* "but there wasn't any" is high and the pitch range is narrow. These words are relatively unimportant and are said at a faster speed. *Leng3qi4* "air conditioning" is emphasized and so expanded in duration and pitch range. The steep drops in pitch exaggerate and emphasize the lowness of 3rd tone *leng3* and fall of 4th tone *qi4*. The lengthening and pitch drops in *leng3qi4* also contribute to the complaining impression of this example.

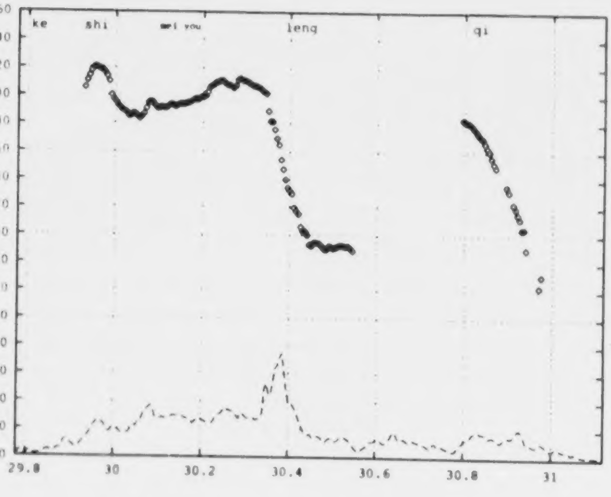

Figure 3: ke3shi4 mei2you3 leng3qi4
[But they didn't have air-conditioning]

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Cognitive and Affective States

Certain cognitive states tend to have certain systematic influences and cause specific variations of the shapes of intonation through modifications to pitch shape and height, amplitude, and duration. Variations in pitch slope and direction are significant in contributing to the overall discourse interpretation. In Chinese, syllables with a convex pitch shape are commonly perceived as more harsh. Concave pitch shapes commonly give a softer impression. Pitch level and rhythmic tempo are also used for specific discourse effects. For example, a raised pitch form is often used to refer to things at a distance, either physically not in the immediate area, or metaphorically far away, as in reference to a prior topic.

On the whole, pitch raising and lengthening are associated with doubt, uncertainty, continuation, and hesitation, while pitch lowering is often associated with certainty, definiteness, finality, authoritativeness, and negativity. The degree of tentativeness or definiteness is often correlated with the steepness of pitch slope. These lowering and raising effects are often strong enough to change citation high level 1st tone to become similar to falling 4th tone contour, and 4th tone to a high 1st or rising 2nd tone shape.

Figure 4 is an example to illustrate the effect of negativity on tones. Here the speaker is describing the appearance of mummies: [xiang4 ne4ge0 rou4gan1]. The strong negative feeling causes 1st tone *gan1* to take on a falling 4th tone shape, and the entire word *rou4gan1* is said low in pitch. Negativity is often accompanied by a choppy, broken rhythm, expressed in this example by the clipped speaking rhythm of *rou4gan1*. Surprise, on the other hand, is often characterized by a high pitch level, a strong rise-fall shape, and a steep pitch slope, as can be seen in the same chart. In this example, speaker B's surprised response "*owaa*" has the typical pitch shape of surprise.

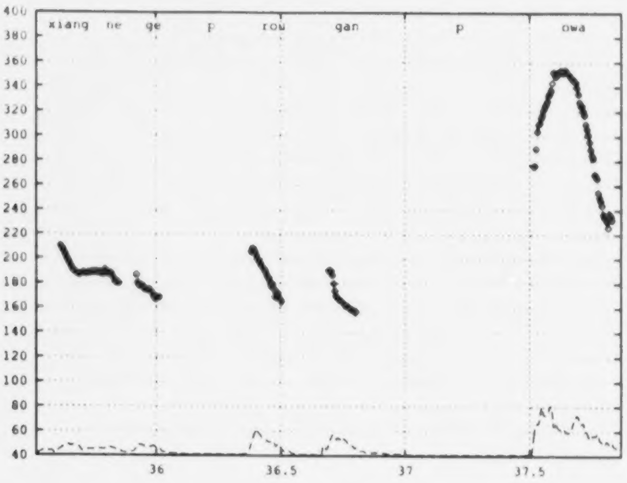

Figure 4: xiang4 ne4ge0 rou4gan1 owaaa
[Looks like dried meat Wow]

Hesitation and uncertainty are often accompanied with rising pitch levels, and lengthening of syllables. The rising form expresses the questioning uncertainty state, and the lengthening

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gives the speaker time to continue. An example of hesitation can be seen in Figure 5: [*ran2hou4 ne4ge0 jiu4shi4*]. Because of the associated uncertainty, the 4th tone *jiu4* changes to a rising pitch form while *ge0* is greatly lengthened due to hesitation. The rising pitch form of *ran2hou4* in this example also reflects the uncertainty state. In this case, 4th tone *hou4* changes dramatically from a falling shape to a rise-level shape.

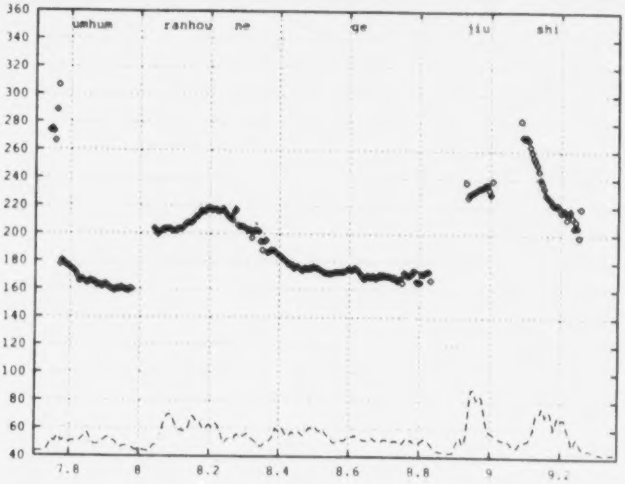

Figure 5: ran2hou4 ne4ge0 jiu4shi4
[Then that just is]

In Figures 6 and 7, we can see how variations in pitch slope give rise to different perceptions of cognitive state. In Figure 6, the concave shape of *dui4* "right" accompanies a soft, gentle and prolonged agreement with the main speaker. By contrast, the mainly convex and steep downward slope of *dui4* in Figure 7 is associated with a strong emphatic and resolute agreement with the other speaker

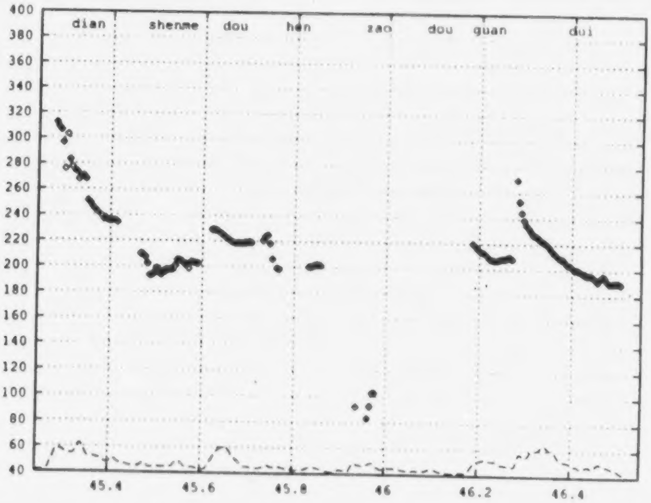

Figure 6: dian4 shen2me0 dou1 hen3 zao3 dou1 guan1 dui4 [Right]

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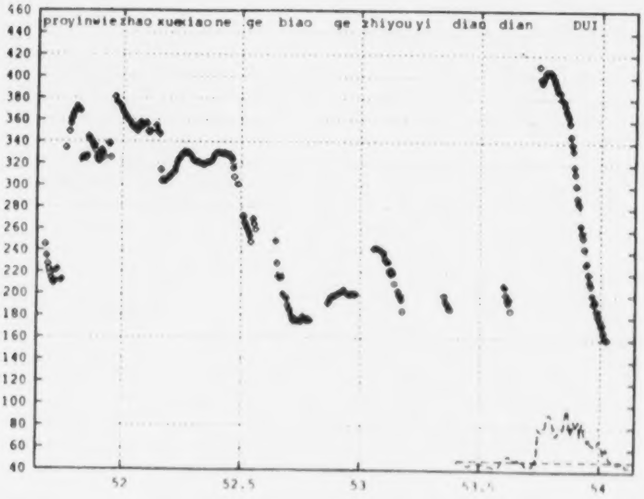

Figure 7: yin1wei4 zhao4 xue2xiao4 ne4ge0 biao3ge2 zhi3you3 yi1dian3dian3 dui4 [Right]

Discourse Markers

In discourse, topic focus and the interest of participants are constantly changing, and many aspects of speech are involved in cooperatively coordinating the flow of topics and interests between participants. One class of words which are frequently used in this cooperative coordination are discourse markers. Discourse markers are words or phrases which are commonly used to signal the relationship between discourse units. They include words such as *suo3yi3* "so", *yin1wei4* "because", *ke3shi4* "but", *dan4shi4* "but", *ran2hou4* "then" and *jiu4shi4* "that's just". Discourse markers guide the conversation along so it can proceed in a more unified smooth manner. They are important because they often signal new things or that something important is coming up, and they signal the relationships of topic flow and the nature of each connecting relationship.

Analysis of the data shows that discourse markers such as *ranhou* perform at least three principle functions. They signal the flow of topic by acting as indicators of relationships between phrases and subtopics. Discourse markers also act as signals between interacting participants to control floor-negotiations such as floor holding and turn-taking, and are often used as a strategy to gain time to recall or organize what to say next. Thirdly, they function as expressions of cognitive-affective states. Because of these considerations, discourse markers tend to express a lot of emotion, and therefore carry a lot of intonation.

In my corpus, the discourse marker *ranhou* was used quite frequently, especially in narrative speech, to connect both temporal sequences and event sequences, i.e. narratives which follow a natural or logical development. By focusing on *ranhou* in different discourse contexts we can glean an understanding of how intonation performs its cognitive and discourse functions.

In general, *ranhou* with a narrow pitch range was found to indicate continuing topic development from the immediately preceding phrase while *ranhou* with a larger pitch range tends to signal a return to a previous topic, usually after an intervening sub-topic. In the example of

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Figure 8, the shape of *ranhou* matches well with the lexical rise-fall tonal pattern. The pitch range is relatively high and *ranhou* is perceptually prominent both from its pitch range and amplitude. The prominent *ranhou* here signals the break from the immediately preceding topic.

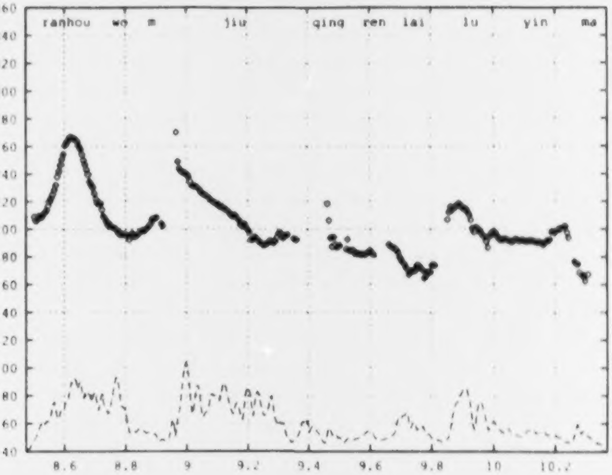

Figure 8: ran2hou4 wo3m0 jiu4 qing3 ren2 lai2 lu4yin1 ma0
[Then we asked people to come to record]

In the following phrase, as seen in Figure 9, *ranhou* has a rise-level contour in a narrow pitch range. This phrase is a natural continuation of the preceding phrase, and this is reflected in the moderate pitch height and narrow range of *ranhou*. The change in *hou4* from a falling form to a level or slightly rising contour also expresses continuation and some uncertainty. We can see that *yi3hou4* in this example also reflects some uncertainty and this is expressed in the level ending following the initial fall in *hou4*.

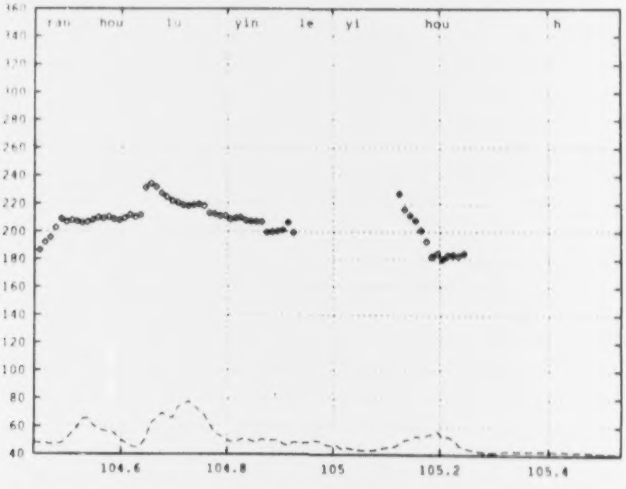

Figure 9: ran2hou4 lu4yin1 le0 yi3hou4 [Then after we did the recording]

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By the following phrase, Figure 10, the speaker has successfully recalled a relevant piece of information and is more confident of what to say, and this is reflected in the downward pitch slopes of both 2nd tone *ran* and 4th tone *hou*, although the level ending on this hou4 suggests some uncertainty is still present.

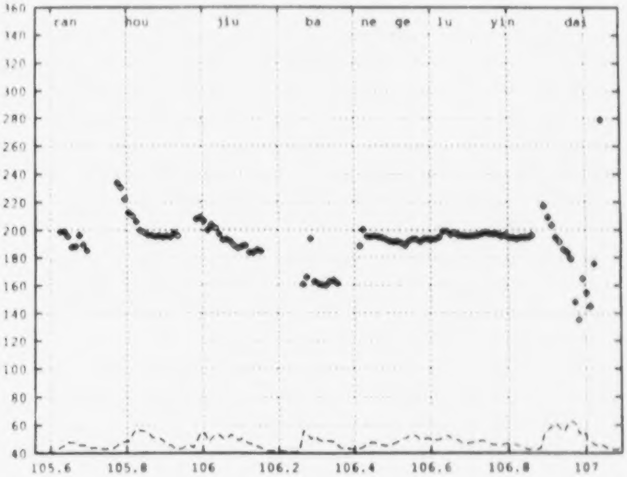

Figure 10: ran2hou4 jiu4 ba3 ne4ge0 lu4yin1dai4
[Then we took the tape]

The contour of *ranhou* in Figure 11 illustrates what often occurs in competitive floor-negotiations between participants.

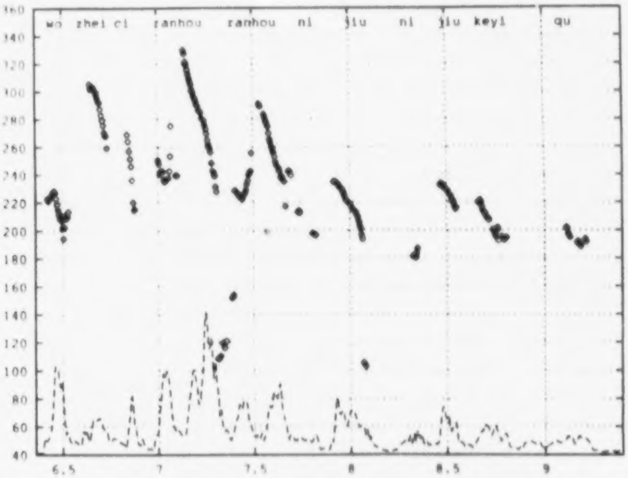

Figure 11: wo3 zhei4ci4 hui2 - ran2hou4 ran2hou4 ni3 jiu4 ni3 jiu4 ke3yi3 qu4
[This time I - Then then you can just you can just go]

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My data show that in interruption situations, speakers often respond by using discourse markers to hold the floor with loud but relatively empty-content words. In Figure 11, speaker A tries to interrupt by saying "Wo3 zhei4ci4-" meaning "This time I-". Speaker B immediately reacts by repeating *ranhou* two times with a high amplitude and expanded pitch range. Note that there is a 50Hz pitch drop between the first and second *ranhou*. This reduplication and the down-stepping seen here are common in this type of case, because the speaker will first try to hold the floor, then return to a more normal pitch level to resume.

In the example of Figure 12, the speaker is speaking in a slow and careful manner. The pitch range of *ranhou* is expanded, and amplitude is high. *Ranhou* is prominent in this case because it is being used to signal the contrast between the "Chinese input" of the previous phrase and the "English output" of this phrase. In this sense, it shares with anaphoric reference a contrasting or turning-away from the previous phrase.

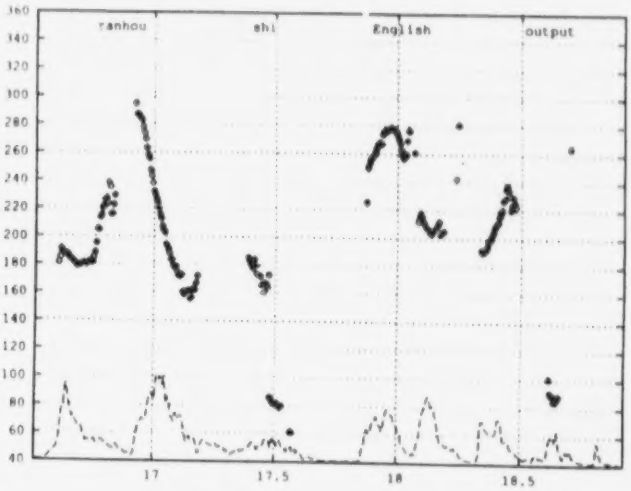

Figure 12: ranhou shi English output
[Then the English output]

CONCLUSION

Analysis of discourse data shows that tones and intonation interact in systematic ways so that participants successfully communicate the many levels of meaning present in discourse. Spontaneous natural discourse is a complex process encompassing cognitive relations, interrelationships among people, and emotions and judgements on discourse topics, and intonation is of critical importance in expressing this complexity. Many elements of intonation are fundamentally iconic in nature, because the relationships of the forms of sound mirror the internal connections which exist between physiology, cognition, and emotion. This is where intonation achieves its full forcefulness in all languages.

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Toward a typology of tense, aspect and modality in the Formosan languages: a preliminary study

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Introduction

In the past decades, the Formosan languages have been investigated more or less extensively. Though the phonology of most of these languages has been well studied, the syntax of the vast majority, not to talk about the variations that divide the dialects of each language family, is still poorly understood[1]. As a consequence, the subrelationships of the Formosan languages with respect to one another and to the languages spoken outside Taiwan are still controversial.

The present paper being part of on-going research on the grammatical typology of the Formosan languages, we do not intend to discuss here the internal relationships of these languages or try to reconstruct the proto language from which they are issued. Our aim is to present a typological overview of the temporal/aspectual and modal systems of five of these languages (Atayal, Bunun, Rukai, Saisiyat, Tsou), which have been selected both for their geographic dispersion and syntactic diversity.

Geographically, these languages stretch from north to south and east to west. Atayal is the most widely spread language: it is found in the northern (Ilan, Taipei, and Taoyuan counties), north-western (Hsinchu, Miaoli and Taichung counties) - where Saisiyat is still spoken by a small community - central (Nantou county) and eastern (Hualien county) portion of the island. Bunun is located in Central and Southern Taiwan. Tsou is spoken in Southern Taiwan, in the mount Ali area, and Rukai stretches through the South (Taitung, Pingtung and Kaoshiung counties). All these languages have various dialects[2] which may differ only phonologically (e.g. Tsou, Saisiyat) or diverge also syntactically (e.g. Rukai, Atayal, Bunun).

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[1] If not mentioned otherwise, the data presented in this paper comes from our own field work (published or unpublished); it was collected between 1988 and 1994 with the financial support of (i) the National Science Council (NSC grants 77-0301-H003-14, 78-0301-H003-19, 80-0301-H003-01 on Atayal, NSC grant 83-0301-H003-017 on the "Typology of grammatical relations in some Formosan languages"), (ii) the local government of Kaoshiung Prefecture on Bunun, and (iii) the Pacific Cultural Foundation on Rukai.

[2] Because of limitations of both space and time, we have been obliged to select from each language a representative dialect on which we could base our discussion. Our selection was made on the basis of the following factors: (i) the data was available to us; (ii) the dialect in question was found to be the

Syntactically, all these languages are basically verb-initial[3]. The postverbal order of the NP arguments is more or less fixed and determined by a series of syntactic and semantic factors that will be discussed in forthcoming papers (see Huang; Zeitoun). With the exception of Rukai[4], all these languages pattern alike in having the semantic role of the NP selected as subject morphologically marked on the verb by means of an affix. The peculiarity of this 'focus' system lies in the fact that any NP, whatever its semantic role (e.g. agent, theme, locative, instrument, etc.), may serve as subject. We can roughly distinguish two kinds of constructions: in the first one, the agent is viewed as the focus of the clause (the A(gent) F(ocus) construction); in the second, any other NP can function as subject (the N(on)-A(gent) F(ocus) construction), the verbal affix determining its semantic role (either theme/patient, source/goal/locative or instrument)[5]. This dichotomy is illustrated in (1a) and (1b) respectively.

(1) Atayal (Wulai), Huang (1993:10-11)
a. t-m-tuʔ taliʔ qhuniq[6]
crush-AF Taliʔ tree
'The tree crushed Taliʔ

b. tʔ-an qhuniq taliʔ

---

most representative of its family. Atayal consists of two major dialects, Squliq and Cʔuliʔ. We selected Wulai to illustrate the former. Bunun is made up of five dialects, Takitodo, Takibaka, Takbanuað, Takivatan and Isbukun, the latter of which will be the object of our study. Finally, Tfuea and Budai were selected as representative of the Tsou and Rukai languages respectively. The data on Saisiyat is based on Ye (1991).

[3]. Note that Saisiyat displays SVO word order in ellicited sentences - supposedly under the influence of Chinese (Ye, 1991:34-36) - but VSO word order in folkstories and traditional songs.

[4]. In Rukai, verbal affixes indicating the semantic role of the focus NP have been lost through the attrition of the initial auxiliary. Hence, in (i), there is no syntactic coding of the subject on the verb.

(i) Budai
w-a-sititi-aku ki lampau
u-Real-beat-1S.Nom Acc Lampau
'I beat Lampau'

With the exception of Mantauran, the Rukai dialects have developed an active/passive voice dichotomy not found in the other Formosan languages. Compare (i) and (ii).

(ii) Budai
ki-a-sititi nakuanə ku lampau
ki-Real-beat 1S.Acc Nom Lampau
'Lampau was beaten by me'

[5]. To simplify, we will purposely ignore the morphological variations that divide these languages and will not explain in detail the semantic function of each of the verbal prefixes. We may say briefly that in AF constructions, verbs are usually marked with *-um-*, *m-*, *Ø*, etc. while in NAF constructions, they may be suffixed with *-un* (PF), *-an* (PF and/or LF) or prefixed with *s-*, *si-*, *ʔs-* (IF/BF).

[6]. To avoid any confusion, we use IPA symbols throughout the whole paper. The following abbreviations are used in the glosses: Acc: Accusative, Adv: Adverb, AF: Agent Focus, Asp: Aspect, Ben: Benefactive, BF: Benefactive Focus, Caus: Causative, Comp: Completive aspect, Gen: Genetive, IF: Iterative Focus, Itr: Iterative, Irr: Irrealis, Loc: Locative, LF: Locative Focus, NAF: Non Agent Focus, Neg: Negation, Nom: Nominative, Obl: Oblique, P: Plural, PF: Patient Focus, Real: Realis, Red: Reduplication, S: Singular.

crush-NAF tree Taliʔ
'A tree crushed Taliʔ'

They differ, however, in a number of respects: (1) some of these languages preserve a nominal case marking which has been lost in others (e.g. Mayrinax vs. Wulai in Atayal); (2) while the nominal case marking of most of these languages (e.g. Atayal, Rukai) is based on the nature of the referent, i.e. common nouns are marked differently from personal nouns and kinship terms, Tsou has developed a complex system in which the referent is localized in relation to the universe of discourse (see Zeitoun 1993)[7]; (3) some languages (e.g. Atayal, Tsou as opposed to Rukai or Bunun) have a system of auxiliaries which usually occur in clause-initial position. The occurrence of these auxiliaries is not syntactically required for the well-formedness of a sentence in Atayal (Wulai) but cannot be omitted in Tsou.

We will not elaborate further on these linguistic variations. They were introduced to show that the Formosan languages are worth being examined for themselves and from a typological point of view. Having presented the geographic distribution and outlined briefly some of the syntactic features of the languages under study, let us now return to our immediate concern. The aim of this paper is to show that the Formosan languages, like the Philippines-type languages (see Reid 1992), have a complex system of verbal morphology which includes distinctions of voice (or focus), tense/aspect and mood. In the absence of temporal/aspectual or modal affixes/particles, focus affixes carry temporal/aspectual or modal information. Hence, in all the languages under study here, if the temporal frame is left unspecified, the AF m- forms (realized as *-um*, *-m-*, *m-*, *Ø*, etc.) are found to refer to situations having either occurred or actually taking place (realis). In co-occurrence with temporal/aspectual or modal affixes/particles, focus affixes retain their primary function: they indicate the semantic role of the NP selected as focus. In other words, (AF) m-forms may be found in the irrealis, but they do not carry any temporal/aspectual or modal information. Compare (2)-(3).

(2) a. Atayal, Wulai (Huang 1993:41)
m-qwas qutux knerin
AF-sing one woman
'A woman is singing/sang'

b. Bunun (Isbukun)
ma-baliv-ik tu tasa tu lumah

---

[7] Our analysis differs from that of Tung (1964:147), who proposes that case markers locate a referent in space, the speaker being taken as the origo. In Zeitoun (1993), it is shown that (1) we must drop such an egocentric analysis because it fails to account for some of the data, and that (2) three parameters must be taken into consideration : the speech act participants plus the time and the place of the utterance

AF-buy-1S.Nom one house
'I'm buying/bought a house'

(3) a. Atayal, Wulai
musaʔ m-qwas qutux knerin
Asp AF-sing one woman
'A woman is going to sing'

b. Bunun (Isbukun)
na-ma-baliv-ik tu tasa tu lumah
Irr-AF-buy-1S.Nom one house
'I want to/will buy a house'

In the absence of focus affixes on the verb, temporal/aspectual affixes/particles may carry voice distinctions. In a number of languages (e.g. Atayal, Bunun), the temporal/aspectual particle *-in-*, which indicates relative anteriority in Wulai (see Huang 1993:67) or a completive aspect in Isbukun, is used in PF constructions. Compare (4) and (5).

(4) Atayal (Wulai)
p-in-aŋaʔ-makuʔ laqiʔ qani
PF-carry-1S.Gen child this
'I (once) carried the child on my back'

(5) Bunun (Isbukun)
l-in-udah-kuʔ taknaʔ hay minsum-aŋ
PF-beat-1S.Acc yesterday Tp come-still
'The one beaten by me yesterday came again'

1. The Realis/Irrealis dichotomy

1.1. Against a tripartite system (Past, Present, Future)

Li (1973:157) claims that the temporal system of Tanan (Rukai) - closely related to Budai - is based on a tripartite distinction of past, present and future, realized respectively with the affixation (to the main verb) of *wa-*, Ø and *ay-*, as shown in Table 1 below.

Table 1: Li's (1973) classification of tense and aspect in Rukai (Tanan)

Active voice

Aspect Tense	Plain	Completive	Continuative
Pres	kanɔ	kanɔ-ŋa	kanɔ-kanɔ

Past	w-a-kanɔ	w-a-kanɔ-ŋa	w-a-kanɔkanɔ
Fut	ay-kanɔ	ay-kanɔ-ŋa	ay-kanɔ-kanɔ

Passive voice

Aspect Tense	Plain	Completive	Continuative
Pres	ki-kanɔ	--	ki-kanɔ-kanɔ
Past	ki-a-kanɔ	ki-a-kanɔ-ŋa	ki-a-kanɔkanɔ
Fut	ay-ki-kanɔ	ay-ki-kanɔ-ŋa	ay-ki-kanɔ-kanɔ

His analysis raises a number of problems. We will only mention three of them.

First, note that the 'plain' form (e.g. *kanɔ* 'eat') is never used as such, hence (5) is ungrammatical: *kanɔ* represents a root form.

(5) Rukai (Tanan)
* kanɔ kuani umas sa aga
eat that man rice

Second, a verb prefixed with *w-a-* may refer to either a past or present event, depending on the occurrence of (a) a temporal adverb as in (7b), or (b) an aspectual particle as in (8).

(7) Rukai (Tanan)
a. w-a-kanɔ kuani umas sa aga
u-Real-eat that man rice
i. 'The man is eating the rice'
ii. 'The man ate the rice' (Li 1973:158)

b. w-a-kanɔ kuani umas sa aga kuðaa
u-Real-eat that man rice yesterday
'The man ate the rice yesterday'

(8) Rukai (Tanan)
w-a-kanɔ-ŋa kuani umas sa aga
u-Real-eat-Comp that man rice
'The man has eaten the rice already'

Third, by talking about a 'future' tense - expressed by the prefixation of *ay-* in Tanan - Li makes abstraction of the modal interpretation, illustrated in (9), implied in this type of construction.

(9) Rukai (Tanan)
a. (a)y-ua-su inu ?

Irr-go-2S.Nom where
'Where will you go/are you going ?'

b. ay-tumawlay-aku kyasa
Irr-tell tale-1S.Nom now
'I shall tell/am going to tell a story now'

A comparison of the above examples clearly shows that Budai establishes a basic modal (and not temporal) distinction between *realis*, where situations are viewed as having occurred or actually taking place, and *irrealis*, where events are perceived as having not yet happened, may possibly happen (hypotheticals) or will definitely not happen (counterfactuals). Though the Rukai dialects differ from the other Formosan languages in their voice systems, all these languages pattern alike in sharing this dichotomy. Further examples, taken from Atayal and Bunun, are given in (10) and (11) respectively.

(10) Atayal (Wulai)
a. m-qinax taliʔ hiraʔ
AF-run Taliʔ yesterday
'Taliʔ ran yesterday'

b. m-qinax taliʔ kryax
AF-run Taliʔ every day
'Taliʔ runs every day'

c. p-qinax-sakuʔ (suxan)
AF-run-1S.Nom (tomorrow)
'I will run (tomorrow)'

(11) Bunun (Isbukun)
a. ma-ludah-kuʔ sayaʔ taknaʔ
AF-beat-1S.Acc 3S.Nom yesterday
'He beat me yesterday'

b. sayaʔ hay kawpa tu hanyan ma-ludah maðaku
3S.Nom Tp every day AF-beat 1S.Acc
'He beats me every day'

c. mais saduʔ saikin saitiaʔ hai na-palinutu-an-kuʔ
if see 1S.Nom 3S.Acc Tp will-tell-NAF-1S.Acc
'If I see him, I'll tell him'

Our claim is supported by the fact that in the irrealis, AF and NAF constructions are subject to a number of morpho-syntactic as well as semantic constraints although not all these languages exhibit the same kind of constraints.

1.2. Morpho-syntactic and semantic constraints

Morphologically, we note some discrepancies in the type of verbal affixes/auxiliaries used in the realis and in the irrealis.

In Atayal (Wulai), verbs occurring in AF constructions are usually prefixed with *m-* or infixed with *-m-* in the realis. They are marked with *p-* in the irrealis. This contrast is illustrated in (12a-b).

(12) Atayal (Wulai)
a. m-qwas-sakuʔ (hiraʔ/*suxan)
AF-sing-1S.Nom (yesterday/*tomorrow)
'I sang (yesterday)'

b. Huang (1993:11)
p-qwas-sakuʔ (suxan/*hiraʔ)
AF-sing-1S.Nom (tomorrow/*yesterday)
'I will sing (tomorrow)'

In NAF (and more specifically in PF) constructions, verbs are marked with *-an* in the realis but with *-un* in the irrealis[8]. Compare (13a-b).

(13) Atayal (Wulai)
a. βhiy-an-makuʔ taliʔ (hiraʔ/*suxan)
beat-NAF-1S.Gen Taliʔ (yesterday/*tomorrow)
'Taliʔ was beaten by me (yesterday)'

b. βhiy-un-makuʔ taliʔ (suxan/*hiraʔ)
beat-NAF-1S.Gen Taliʔ (tomorrow/*yesterday)
'Taliʔ will be beaten by me (tomorrow)'

In Tsou, auxiliaries are marked as AF or NAF in the realis (cf. *mi-* vs. *i-*; *mo(h)* vs. *o(h)*); they are invariable in the irrealis (cf. *te, ta, tena*, etc.). In both cases, however, the semantic role of the NP selected as subject is marked on the verb by means of an affix. Compare (14)-(15).

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[8] In Atayal (Wulai) and Bunun (Isbukun), the instrumental/benefactive foci (*s-* in Wulai and *ʔs-* in Isbukun) occur in the realis *and* the irrealis because the NP selected as focus only involves a peripheral argument.

(14) Tsou

a. mo-ʔu ɓaito to oko nehucma
AF-1S.Nom see Obl child yesterday
'I saw the child yesterday'

b. o-ʔu aiti ʔo oko nehucma
NAF-1S.Gen see Nom child yesterday
'I saw the child yesterday'

(15) Tsou

a. te-ʔo ɓaito to oko hohucma
will-1S.Nom see Obl child tomorrow
'I will see the child tomorrow'

b. te-ʔo aiti ʔo oko hohucma
will-1S.Gen see Nom child tomorrow
'I will see the child tomorrow'

Syntactically, NAF constructions may be prohibited in the irrealis. Ye (1991:71ff) argues quite convincingly that in Saisiyat the modal auxiliary *ʔam* is used in co-occurrence with verbs marked as AF but not with those marked as NAF. A nominalized construction must be used instead in PF constructions to refer to the future. Compare the grammaticality of (16a-c).

(16) Saisiyat, Ye (1991:72)

a. ŋyaw ʔam s-om-ʔael ka ʔalaw
cat will eat-Af fish
'The cat is going to eat the fish'

b. * ʔalaw ʔam si-ʔael-en nokaʔ ŋyaw
fish will eat-PF Gen cat

c. ʔalaw ka-siʔael-en nokaʔ ŋyaw
fish eat-PF Gen cat
'The fish is going to be eaten by the cat' (Lit: 'The fish will be the cat's eating')

Semantically, AF constructions are opposed to NAF constructions in the realis in terms of perfectivity/imperfectivity. This contrast is exemplified in (17) and (18).

(17) Atayal (Wulai) (Huang 1993:41)

a. m-in-qβaq-sakuʔ keʔ naʔ tayan
AF-past-learn-1S.Nom word naʔ Atayal
'I learned Atayal' (I may still be learning it; I still can't speak the language)

b. q-in-βaq-an-maku?   ke? na? tayan
past-learn-NAF-1S.Gen word na? Atayal
'I learned Atayal' (I can speak the language)

(18) Tsou
a. mi-ta   m-imo ta emi
AF-3S.Nom drink Obl wine
'He is drinking wine'

b. i-ta   ima ?e   emi
NAF-3S. Nom drink Nom wine
'He has drunk wine' (Some is still left)

If we accept Comrie's (1976) classification of aspectual oppositions - we reproduce below the table on given p. 26 - we can then easily account for the fact that (in most languages) AF constructions are commonly used to describe habitual or continuous (progressive and nonprogressive) situations[9]. A comparison of (19b-c) and (20a-b) shows that (1) in the absence of aspectual auxiliaries/particles, there is no neat distinction between the progressive and the non-progressive, (2) the situational context will determine whether the event referred to has already happened or is actually taking place.

Table 2: Comrie's (1976:26) classification of aspectual oppositions

Perfective   Imperfective

Habitual   Continuous

Nonprogressive   Progressive

(19) Atayal (Wulai)
a. k-m-ayan-saku? squ? sunan kryax   (Huang 1993:61)
AF-say-1S.Nom squ? 2S.Loc every day
'I talk to you every day'

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[9] This does not exclude the fact that in NAF constructions the occurrence of aspectual auxiliaries/particles may yield a progressive reading. Compare (i) and (ii).

(i) Tsou
i-ta   ima ?e   emi
NAF-3S.Gen drink Nom wine
'He has drunk wine'

(ii) Tsou
i-ta   n?a ima ?e   emi
NAF-3S.Gen still drink Nom wine
'He has been drinking wine'

b. k-m-ayan-sakuʔ squʔ sunan Ø
AF-say-1S.Nom squʔ 2S.Loc Ø
i. 'I talked/was talking to you'
ii. 'I am talking to you'

c. nyux-sakuʔ k-m-ayan squʔ sunan
Asp-1S.Nom talk squʔ 2S.Loc
i. * 'I talked to you'
ii. 'I was/am talking to you'

(20) Tsou
a. mo eoɓako to oko ʔo amo
AF beat Obl child Nom father
i. 'Father beat the child'
ii. 'Father is beating the child' (Both unseen at Speech Time)

b. mo nʔa eoɓako to oko ʔo amo
AF still beat Obl child Nom father
i. * 'Father beat the child'
ii. 'Father is (still) beating the child' (Both unseen at Speech Time)

In the irrealis, no such distinction is found. Compare (18)-(21) and (22a-b).

(21) Tsou
a. te-ta m-imo ta emi
will-3S.Nom drink Obl wine
'He will drink wine'

b. te-ta ima ʔe emi
will-3S.Gen drink Nom wine
'He will drink wine'

(22) Tsou
a. mi-ta nʔa mimo ta emi
AF-3S.Nom nʔa drink Obl wine
'He is (still) drinking wine'

b. te-ta nʔa mimo ta emi
will-3S.Nom nʔa drink Obl wine
'He is going to drink wine again'

1.3. Degrees of complexity

So far, we have shown that all the Formosan languages (under study) exhibit a basic modal (and not temporal) distinction between realis and irrealis. Below, we will suggest that they display various degrees of complexity.

1.3.1. Perfectivity/imperfectivity in Rukai

We have shown that in the realis, AF constructions are opposed to NAF constructions in terms of perfectivity/imperfectivity. This is true of most, but not all, the Formosan languages. As mentioned in Li (1973) (cf. Table 1), Rukai expresses these concepts through two morphological means, affixation and reduplication. In Budai, the affixation (to the verb) of the aspectual particles *-ŋa* on the one hand and *-ana* on the other hand are used to reflect the concepts of 'perfectivity' (or completive aspect) and 'imperfectivity' (or progressive aspect). The reduplication of part of the verb stem may either yield an habitual *or* a progressive interpretation, depending on the context (e.g. presence of different case markers in Budai). This contrast is illustrated in (24a-b).

(23) Rukai (Budai)
a. w-a-tubi-ŋa ka Lolai
Real-cry-already child
'The child has cried'

b. w-a-tubi-ana ka Lolai
Real-cry-still child
'The child is crying'

(24) Rukai (Budai)
a. w-a-kanəkanɔ-su ka bələbəlɔ
Real-eat-2S.Nom banana
'You are eating that banana'

b w-a-kanəkanɔ-su ku bələbəlɔ
Real-eat-2S.Nom banana
'You usually eat bananas'

1.3.2. Habitual/generic meaning in Tsou

We have argued that in the realis, AF constructions are usually used to describe habitual or continous situations. We have shown, however, that because Rukai lacks the focus system commonly found in the Formosan languages, this interpretative variation is carried out by a morphological device, i.e. the reduplication of part of the verb stem. Tsou differs also in a number of respects. In this section, we will show that the habitual/episodic readings are taken over by different auxiliaries - compare the use of *da-* in (25) to that of *mi-* in (26) - while in the next section, we will suggest that it has grammaticalized the notion of tense.

(25) Tsou
a. da-ta ɓonɨ to tacɨmɨ
Itr-3S.Nom eat Obl banana
i.'He (usually) eats bananas'
ii. * "He is eating a banana/bananas'

b. da-ta huhucmasi ɓonɨ to tacɨmɨ
Itr-3S.Nom every day eat Obl banana
'He eats bananas every day'

(26) Tsou
a. mi-ta ɓonɨ ta tacɨmɨ
AF-3S.Nom eat Obl banana
i. 'He is eating a banana/bananas'
ii. * 'He usually eats bananas'

b. * mi-ta huhucmasi ɓonɨ ta tacɨmɨ
AF-3S.Nom every day eat Obl banana

Note that *da-* refers to an 'habitual present' so that reference to the past or to the future necessitates the use of temporal auxiliaries (e.g. *mo(h)* and *tena*) - which must occur in clause-initial position - as in (27a-b) respectively.

(27) Tsou
a. moh-ta da huhucmasi ɓonɨ to tacɨmɨ
AF-3S.Nom Itr every day eat Obl banana
'(In the past), he would eat bananas every day'

b. tena da-ta huhucmasi ɓonɨ to tacɨmɨ
Irr Itr-3S.Nom every day eat Obl banana
'(In the future), he will eat bananas every day'

In both examples, the iterative meaning is yielded by the occurrence of *huhucmasi* 'every day'. Its absence in (28a) below gives a different meaning from that of (27a) - the utterance must be given an episodic interpretation - while it renders the second ungrammatical. Compare (27a)-(28a) and (27b)-(28b) respectively.

(28) Tsou
a. moh-ta da ɓonɨ to tacɨmɨ
AF-3S.Nom Asp eat Obl banana
'He ate a banana/bananas'

b. * tena da-ta ɓonɨ to tacɨmɨ
Irr Itr-3S.Nom eat Obl banana

13.3. Grammaticalization of tense in Tsou

It was suggested that in the realis, AF constructions refer to present or past events depending on the situational context (e.g. occurrence of case markers, temporal adverbs or aspectual particles): as illustrated in (29) below, in Atayal (Wulai), a verb marked as AF may appear in co-occurrence (1) with various adverbs (e.g. *hiraʔ* 'yesterday', *soni* 'today', *kryax* 'every day') which determine the temporal frame of the utterance or (2) with the aspectual particle *-in-*. Tsou differs from the other Formosan languages in that it has grammaticalized the notion of (absolute) tense: only *mo-* but not *mi-* can co-occur with *nehucma* 'yesterday'. Compare the grammaticality of (30a-b). In the same vein, the aspectual particle *oa* can co-occur with *mo-* (or *moso*, *o*(*h*)) but not with *mi-* (see (31)). A comparison of these examples clearly indicate that AF/NAF auxiliaries in Tsou not only carry aspectual but also temporal information as well.

(29) Atayal (Huang 1993)
a. m-in-imaʔ sayun taliʔ soni (p. 50)
AF-past-wash Sayun Taliʔ today
'Taliʔ washed Sayun just now'

b. m-ulu-sami lomwa hiraʔ (p.58)
AF-find-1PE.Nom rascal yesterday
'We found a rascal yesterday' (by accident)'

c. k-m-ayan-sakuʔ squʔ sunan kryax (p. 61)
m-say-1S.Nom squ 2S.Loc every day
'I talk to you every day'

d. m-in-wah-sakuʔ (p.9)
AF-past-come-1S.Nom
'I came'

(30) Tsou
a. * mi-ʔo ɓonɨ to tacɨmɨ nehucma
AF-1S.Nom eat Obl banana yesterday

b. mo-ʔu ɓonɨ to tacɨmɨ nehucma
AF-1S.Nom eat Obl banana yesterday

'I ate a banana yesterday'

(31) a. * mi-ta da smovei ta oko
AF-3S.Nom Asp carry Obl child

b. moh-ta da smovei ta oko
AF-3S.Nom Asp carry Obl child
'(In the past), s/he carried the child'

2. Co-occurrence restrictions

Below, we argue that in order to understand the temporal/aspectual systems of the Formosan languages, (a) all the constituents of the sentence must be taken into consideration to account for the possible and impossible co-occurrences of auxiliaries with pronominal clitics (e.g. Atayal) or with case markers (e.g. Tsou, Rukai).

2.1. The auxiliaries *nyux* and *cyux* in Atayal (Wulai) in co-occurrence with different pronouns

Atayal has grammaticalized verbs of possession/location (*cyux* 'have') and existence (*nyux* 'exist') into aspectual auxiliaries. In that language, imperfectivity is rendered through the use of these two auxiliaries, which can (both) co-occur with verbs marked as AF or NAF. A comparison of (31)-(32) shows, however, that they cannot permute freely: as mentionned in Huang (1993:71), *nyux* (the *Proximal Imperfective*) designates "an action taking place close to the speaker", which explains why it can only co-occur with first person pronominal forms (singular or plural), (see (32a-b). *Cyux*, on the other hand, indicates that the action is "taking place away from the speaker". In co-occurrence with a first person pronoun, the event must be interpreted as occurring before, not at Speech Time. Compare (32a)-(33b) and (33a-b).

(32) a. nyux-saku? maniq qulih
Asp-1S.Nom eat fish
'I am eating fish (now)'

b. * nyux maniq qulih hiya?
Asp eat fish 3S.Nom

(33) a. cyux-saku? maniq qulih
Asp-1S.Nom eat fish
i. * 'I am eating fish (now)'
ii. 'I was eating fish' (when answering the phone)'

b. cyux maniq qulih hiya?
Asp eat fish 3S.Nom
'He is eating fish (now)'

2.2. Auxiliaries and case markers in Tsou

Tsou is characterized by the fact that it has developed a complex system of case markers divided into two classes, nominative and oblique, which do not (as in other Formosan languages) mark an NP according to its categorial nature, i.e. mark common nouns differently from personal nouns and kinship terms, but localize a referent in relation to the universe of discourse. Briefly, we may say that, on the basis of their syntactic distribution (see Zeitoun, 1993), we must distinguish between referential (*ʔe, si, ta, ʔo, to*) and non-referential case markers (*na* and *no*)[10]. Furthermore, among referential case markers, *ʔe, si, ta* differ from *ʔo, to* in terms of *identifiability*. A referent marked by *ʔe, si, ta* is identifiable to the addressee, because they are directly related to the universe of discourse while a referent marked by *ʔo, to* may either be identifiable but absent or invisible at Speech time but still or unidentifiable because of being newly introduced in the discourse.

There are some co-occurrence restrictions between case markers and auxiliaries. We will illustrate below with a few examples.

Consider first the following pairs of sentences.

(34) a. da-ta huhucmasi bonɨ to tacɨmɨ
Itr-3S.Nom every day eat Obl banana
'He eats a banana every day'

b. * da-ta huhucmasi bonɨ ta tacɨmɨ
Itr-3S.Nom every day eat Obl banana

(35) a. da-ta kaebɨ bonɨ to huvʔo
Itr-3S.Nom happy eat Obl orange
'He likes eating oranges'

b. * da-ta kaebɨ bonɨ ta huvʔo
Itr-3S.Nom happy eat Obl orange

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[10] Givón (1978:293) gives the following definition of referentiality: "It involves, roughly, the speaker's intent to 'refer to' or 'mean' a nominal expression to have non-empty reference - i.e., to 'exist' - within a particular universe of discourse. [...] If a nominal is 'non-referential' or 'generic' the speaker does not have a commitment to its existence within the relevant universe of discourse. Rather, in the latter case, the speaker is engaged in discussing the genus or its properties, but does not commit him/herself to the existence of any specific individual number of the genus."

(36) a. oʔa moh-ta sʔa da ahtu etamaku to tamaku
Neg AF-3S. Adv Asp never smoke Obl cigarette
'He never smoked cigarettes'

b. * oʔa moh-ta sʔa da ahtu etamaku ta tamaku
Neg AF-3S. Adv Asp never smoke Obl cigarette

aa functions as an auxiliary in (34)-(35), and as an aspectual marker in (36)[11]. Both *aa*s indicate a rupture with Speech time: in the two first examples, *aa* refers to the scanning of a class of occurrences and by implication to the characteristic of the agent of the given sentence; in the latter, *aa* locates an event in the past. As a consequence, in each example, *to* but not *ta* can co-occur with *aa*.

Note also the ungrammaticality of (37b) and the semantic variation yielded by the substitution of *ta* by *to* in (38b). How are we to account for these examples ?

(37) a. mi-ʔo nʔa ɓonɨ ta tacɨmɨ
AF-1S. Asp eat Obl banana
'I'm eating a banana'

b. * mi-ʔo nʔa ɓonɨ to tacɨmɨ
AF-1S. Asp eat Obl banana
'I'm eating a banana'

(38) a. mi-ʔo cu ɓonɨ ta tacɨmɨ
AF-1S. Asp eat Obl banana
'I have been eating a banana'

b. mi-ʔo cu ɓonɨ to tacɨmɨ
AF-1S. Asp eat Obl banana
'I have eaten a banana'

In (37), *nʔa* which translates as 'still', in co-occurrence with *mi-*, refers to an event still on-going at Speech time: therefore *to* cannot co-occur with *nʔa*. In (38), both *ta* and *to* can co-occur with *cu* 'already'. The occurrence of this aspectual marker doesn't enable us to determine whether the situation in question is past and completed or still on-going at Speech time. Such an interpretation is inferred by the presence of other constituents (i.e. case markers). In (38a), the use of *ta* indicates that the banana is still being eaten at Speech time while that of *to* implies that it has already been eaten in (38b).

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[11] See Zeitoun (1992:53-57) for the syntactic distribution of the two *aa*s in Tsou.

Conclusion

In this paper, we have tried to show that all the Formosan languages under study:

(1) exhibit a complex system of verbal morphology which includes distinctions of voice, tense/aspect and modality: in the absence of temporal/aspectual affixes/particles determining the temporal frame of the utterance, focus affixes may take over temporal/aspectual information and conversely, in the absence of focus affixes on the verb, temporal/aspectual affixes/particles may carry voice distinctions,

(2) have a temporal/aspectual system based on a modal dichotomy between realis and irrealis (where AF and NAF constructions are subject to a number of morpho-syntactic as well as semantic constraints),

(3) but display various degrees of complexity.

In the course of the paper, we have also argued that in order to understand the temporal/aspectual and modal systems of these languages, all the constituents of the sentence must be taken into consideration to account for the possible and impossible co-occurrences of auxiliaries with pronominal clitics (e.g. Atayal) or with case markers (e.g. Tsou).

This research represents, however, a preliminary study: it involves only five Formosan languages and more data should be used to test the hypotheses proposed here. Various problems still need to be clarified: it was shown, for instance, that in Atayal the focus affix *-an* occurs only in the realis while *-un* occurs only in the irrealis. This is not the case in Bunun where both affixes occur in the realis but still do not permute freely.

Appendix: Temporal/aspectual and modal systems of each of the language under study.

(1) Atayal

a. Wulai

	Realis	Irrealis
AF	m,-, -um-, Ø	p-
NAF	-an	-un
BF/IF	<--- s- --->	

(3) Bunun (Isbukun)

	Realis	Irrealis
AF	m,-, -um-, Ø	na- + AF or NAF forms
NAF	-an -un	
BF/IF	<--- ʔis- --->	

(4) Rukai (Budai)

Realis	Irrealis
-a-	(L)i- nay-

(5) Tsou (Tfuea)

	Realis		Irrealis		
	AF	NAF	Future/Hypothetical	Counterfactual	Habitual/Generic
			AF/NAF		
Immediate	mi- mo	i-	te, tena	nte	da
Remote	mo(h) moso	o(h)	ta	nto	

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Semantic Schema and Metaphorical Extension:
A study of the Mandarin V-R compounds as a radial category

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1. Introduction

1.1 Theoretical Background

Recent work on cognitive semantics and lexicalization has drawn substantial attention to the correspondence between language and cognition, with a special emphasis on categorization (cf. Lakoff 1987; Talmy 1985, 1991; Langacker 1987,1991;Ono and Thompson 1993). It is argued that language is characteristic of human cognitive activities and that there are direct pairings of parameters of form with parameters of meaning. To fully understand language, one has to probe into the underlying conceptual organization of language. As one central aspect of cognition, categorization in general bears gestalt properties and an ecological structure. It is neither objectivistic nor atomistic as traditionally thought. Similarly, linguistic categories should be viewed as **schematic** in nature and **radially** structured, rather than with discrete boundaries (Lakoff 1987).

The notion of radial structure as defined in Lakoff (1987) provides a new perspective to the study of Mandarin Verb-Resultative (V-R) compounds (eg. 走進，打破，哭醒，聽懂，etc.). As a grammatical category, V-R compounds display a wide range of morphological, syntactic and semantic variations, and prove to be a productive resource for new complex verbs. Early studies on Mandarin V-R compounds focus mainly on their internal morphological and semantic make-ups (cf. Chao 1968; Thompson 1973; Li and Thompson 1981). More recently, researchers have worked intensively on the argument structure and semantic restrictions associated with V-R compounds. Chang (1988, 1991) emphasizes the importance of thematic roles in relation to the grammatical properties of V-R's. Lin (1990) adopts a semantic approach, deriving collocational and subcategorizational regularities of V-R's on the basis of a semantic classification of individual verbs. Within the framework of GB theory, Li (1990, 1993) proposes a structure-based account, which takes the first V as the head. Following the theory of LFG, Huang and Lin (1992) demonstrates a morpholexical approach by postulating argument templates and selection rules to match the argument structure with the thematic structure. Other studies focus on one specific subcategory of V-R's with a detailed characterization of its syntactic or semantic properties (cf. Chang 1993, Gao 1993, Yeh 1993).

1.2 The Question

In their attempts to account for the diverse behavior of V-R compounds, previous studies all operate under the assumption that V-R compounds as a grammatical category consist of a fixed set of 'classes', whose behavior can be rigidly formulated and perhaps predicted in terms of the syntactic and semantic properties of the verbal elements. However, given the wide rang of diversity and the huge number of V-R's, a more basic question needs to be asked: **what makes it possible that all these different event complexes with distinct semantic combinations share the same surface form, i.e., all being coded as a V-R compound**. More specifically, **what *motivates* the various subtypes of V-R compound and how are they interrelated and perceived as one unique grammatical category?**

1.3 Scope and Goal of the Paper

As an attempt to answer the above questions, this paper follows the proposal in Talmy (1991) that certain types of event complex are universally amenable to conceptualization as a single fused event and, accordingly, to expression by a single clause. Mandarin V-R compounds manifest exactly such a conceptual conflation of events (a 'macro-event' in Talmy's terms), which may be established as a component of cognitive-linguistic organization. To account for the internal structure of the V-R category, various *image-schematic models* are proposed as the conceptual bases for categorial extension. This paper further characterizes the cognitive principles that motivate these subtypes, and specifies the conceptual links between them. It ultimately shows how the category of V-R compounds can be reconstructed as a complex, 'radial' category, with non-discrete boundaries, rather than one whose members can be described in terms of a set of shared properties (cf. Lakoff 1987).

1. 4 The Data

The analysis of this paper is based on entries of V-R compounds collected in a large electronic dictionary of Mandarin, which has been developed by the CKIP group at the Institute of Information Science, Academia Sinica. The total number of V-R's in this dictionary is about 2430, but not all of them are found in the CKIP corpus[1] of written Mandarin. Below are some V-R examples that occur most frequently in the corpus:

(1) a. V-到: 送到 流到 移到 增加到 申請到 讀到 觀察到
b. V-Ending State: 割斷 曬乾 修齊 剪開 弄髒 關緊 壓扁 勒死
c. V-出/出來: 放出 掘出 結出 訓練出來 表達出來 想出來

2. Event Structure and Typological Account

2.1 Event conflation as a universal cognitive-linguistic process

The prototypical function of the V-R compound taken as a unit is to report a complex event (cf. Hopper and Thompson 1984:736). This complex event consists of two subevents -- an initial activity (V) and a resultative stage (R), but it is expressed only with a single clause. This kind of event structuring is examined in great detail in Talmy (1991). According to Talmy, although a complex event is usually partitioned into a main event and a subordinate event, together with the relation between them, 'there appears to be a general cognitive process at work in language whereby an event that under a more analytic conceptualization would be understood as complex and represented by a multi-clause syntactic structure can be alternatively conceptualized as simplex and represented by a single clause' (1991:481). This process is termed 'conceptual conflation of events', and the conflated event complex is called a 'macro-event'.

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[1] The CKIP corpus of written Mandarin conisits mainly of newspaper and journal articles, with approximaly 20 million characters.

Within the macro-event, there are two event-components: a main, *framing* event and a subordinate, *supporting* event. The framing event provides the overarching conceptual framework or reference frame for the whole macro-event, and it serves to delineate a certain type of schematic structure in a particular set of organized conceptual domains, a function called 'domain-schematizing'. Talmy identifies five types of domain schematization that the framing event can represent: an event of motion, an event of contouring in time, an event of state change, an event of correlation among actions, and an event of fulfillment in action realization. The supporting event performs a function of *support* in relation to the framing event, which can be further specified as Cause, Manner, or Purpose, etc. Talmy further suggests that the framing event and the macro-event, both representing a conceptual unit mapped with a linguistic unit, should be recognized as two components of cognitive-linguistic organization (Talmy 1991: 481-87).

2.2 Typology of Event conflation

An important claim in Talmy (1991) is that the existence of the macro-event as a cognitive unit and its specific conceptual structuring may be *universals* of linguistic organization. There are two typological accounts concerning the coding of macro-event (1991: 486-87):

> First, languages can generally be divided into a two-category typology on the basis of the characteristic pattern in which the conceptual structure of the macro-event is mapped onto syntactic structure. That is, the core schema of the macro-event may be expressed either by the **main verb** or by the **satellite**[2] (or adjunct). English is mentioned as an example of satellite-framed language, since it is the particle 'in' in sentences like 'The ball rolled in' that expresses the schematic core. Spanish, on the other hand, exemplifies a verb-framed language.
>
> Secondly, the syntactic site -- verb or satellite -- where Path is characteristically expressed is also to a great extent where aspect, state change, action correlation and realization are characteristically expressed.

As will be clear in the following section, these two typological accounts may both apply to Mandarin V-R's, showing that the V-R category in Mandarin is not an isolated phenomenon. It complies with the universal, cognitive-linguistic process that maps conceptual conflation of events with a single syntactic unit. However, a more elaborated account is still needed to account for the language-specific structure of the Mandarin V-R's and the interrelationship among its subcategories.

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[2] A satelite is defined by Talmy (1991:486) as 'the grammatical category of any constituent other than a nominal complement that is in a sister relation to the verb root. It can be either a bound morpheme or a free word, such as English verb particles, Chinese verb complement, German verb prefixes, etc.

2.2. Domain schematization with Mandarin V-R compounds

The V-R compound in Mandarin illustrates exactly a macro-event as defined above, conceptually conflating a complex event into a simplex one and linguistically coding it with a single clause. Following Talmy's typology, Mandarin can be categorized as a satellite-framed language: it maps the core schema of a V-R macro-event into the satellite, i.e., the verb complement (R). And it is true, as Talmy observes, that the satellite may be used to specify five types of domain schematization, including path, aspect, state change, action correlation[3] and realization. Below are illustrations of each type of domain schematization:

(2) a. Motion-Path: 跳下去
    b. Temporal contouring-Aspect: 講下去
    c. State change-Changed property: 弄破
    d. Action correlation-Correlation: 唱和
    e. Action realization-Fulfillment: 殺死

Examples in (2) help to provide some basic ideas regarding the semantic domains commonly encoded by V-R's. Nevertheless, the categorical diversity of V-R's is much more complicated than (2) may show. For example, the same verb complement may be used with either motional or non-motional activities, resulting in some kind of semantic parallelism between the two domains:

(3) Motion: a. 跑到
    b. 跑出/進(來 or 去)
    c. 跑上/下(來 or 去)
    d. 跳過
    e. 走遍
    f. 站起(來)

Non-motion a. 想到
    b. 想出(來) 聽進(去)
    c. 看上 節省下(來)
    d. 想過
    e. 找遍
    f. 想起(來)

---

[3] Examples of VR compounds that specify action correlation are extremely limited in Mandarin.

Given the categorical complexity of V-R's, what needs to be further explored is the interrelationships among different semantic domains and the motivation for clustering them into the same syntactic category. Beyond merely listing possible semantic subtypes of V-R's, the following sections will examine in detail the relationships among the different subcategories of V-Rs, and identify cognitive principles that allow the Mandarin V-R compound to encompass such a wide range of semantic variations.

3. V-R Compound as a Radial Category

3.1 Radial structure

Lakoff (1987) has made it clear that the grammar of a language is a cognitive subsystem. It is dependent on many other aspects of cognition, such as prototypes, cognitive models, mental spaces, etc. It is shown that similar to conceptual categories such as the notion 'mother', linguistic categories in general exhibit categorial structure of a ***radial*** type. That is, there is a central subcategory and non-central extensions on it. The central case provides the best illustration of the category, and the non-central cases are derived by convention as variations on the ideal case. The possibilities for extension are by no means random, since they are determined or more accurately, *motivated* by the central model plus certain general cognitive principles.

According to Lakoff (1987: 68, 113-14), there are four types of structuring principles that give rise to radial categorization: propositional structure, image-schematic structure, metaphorical mappings, and metonymic mappings. These four cognitive principles are essential to the characterization of the overall category structure, specifying the central members and links between the central and non-central cases.

The concept of radial structure, as defined above, may also be applied to the categorial characterization of Mandarin V-R compounds. As will be shown below, Mandarin V-R's consist of a central subcategory and a number of extensions, whose interrelationships may be accounted for with image-schematic models and metaphorical/metonymic mappings.

3.2 Path-Schemas and Metaphorical Links

It is well established in the literature that bodily experience with the *spatial* domain proves to be most basic in human cognition. It provides the foundation for conceptualization of many other semantic domains (Lakoff and Johnson 1980). As mentioned previously, Talmy (1991, 1987) also takes the event of motion with a specified Path or Location to be the basic type of event conflation. More relevantly, Goldberg (1992) proposes that the constructional scheme describing caused motion is mapped unto the expression of resultatives. According to Goldberg's analysis of English constructions, the resultative construction in English, which marks a 'change of state', is itself a metaphorical extension of the caused-motion construction, which marks a 'change of location'. In other words, the semantic pattern 'X causes Y to move to Z' is utilized to express "X causes Y to become Z", as illustrated by the two sentences in (4):

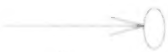
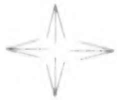
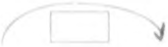
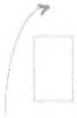
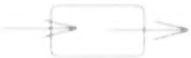
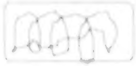
(4) a. Caused-motion: Joe kicked the bottle into the yard.
b. Resultative: Joe kicked Bob black and blue.

Goldberg's analysis points out one important fact that the way 'change of state' is expressed is usually modeled upon the way locational change is expressed. The Mandarin coding system provides even stronger evidence, since in Mandarin, both caused-motion and resultative can be expressed as V-R compounds:

(5) a. 我把球 踢進 洞裡. 'I kicked the ball into the hole.'
b. 我把他 踢傷 了. 'I kicked him and (as a result) he was hurt.'

The domain of spatial/locational motion (Motion-Path) provides the basic cognitive model for describing other resultative activities, be it physical or non-physical, which is made possible via the metaphor ACTIVITY as MOTION, or ACTIVITY as JOURNEY (Lakoff and Johnson 1980). The metaphorical transfer highlights the notion 'Path' in motion and the corresponding feature 'state change' in most resutative activities. The notion Path may give rise to various image-schemas, which are in turn utilized to conceptualize distinct activity patterns in non-spatial domains. In (6) below, some of the most common Path-schemas are represented, and examples of V-R's are listed to show that the particular Path-schema is mapped from the spatial/locational domain (SP) to the domain of physical state (PH) and to the domain of mental or perceptual state (M/P):

(6)

		Semantic Domain		
Path-Schema	*Visual Image*	SP	PH	M/P
Schema 1. Path with an Endpoint		放到	弄壞	猜中
Schema 2. Path with Direction		升起	湧起	想起
Schema 3. Path through/across a landmark		越過	勝過	信(得)過
Schema 4. Path over/under a landmark		爬上	考上	看上
Schema 5. Path into/out of a container		跑進	賺進	讀進
Schema 6. Path on a surface		撒遍	找遍	看遍

(6) shows that each Path-schema underlines a particular case of spatial motion, exemplified by the V-R compound under the column SP, and the particular Path-schema may be mapped unto the domain of physical state, evidenced by the example under PH, and then unto the mental/perceptual state, evidenced by the example under M/P. Therefore, for example, along Schema 5 (Path In/out of a container), we have 跑進 -> 賺進 -> 讀進. Along each individual Path-schema, the metaphorical links among the different semantic domains can be specified as follows:

(7) Change of location --> Change of physical state --> Change of mental or perceptual state

In the following, a detailed specification of each Path-schema will be given, together with a discussions of possible extensions.

3. 3 Schematic Properties of Path-Schema and Possible Extensions

3.3.1 Schema 1 (Path-Endpoint)

Among the proposed image-schemas in (6), Schema 1 (Path-Endpoint) is considered to be central, since it provides the most general case of a Path. The centrality of Schema 1 can also be seen from the frequent occurrence of this type of V-R's in the CKIP corpus, as listed above in (1a), and the prototypical V-R's, as exemplified in (1b).

(1) a. V-到: 送到 流到 移到 增加到 申請到 讀到 觀察到
b. V-Ending State 割斷 曬乾 修齊 剪開 弄髒 關緊 壓扁 勒死

The major schematic properties in Schema 1 include: a generic trajectory of Path and the Endpoint of that Path. In an event of spatial motion, the endpoint is the final location the moving entity (be it Agent or Theme) ends up with. This schematic pattern corresponds well with the basic semantics of resultatives, namely, an activity gives rise to a state/property (normally with regard to the Patient), as a direct result of the activity. The resultative state (R) is conceptualized as signaling the ending point/location of the activity-path.

The other non-central subcategories of V-R's can all be taken as variations or extensions of the central case. They are motivated either by a different Path-schemas or a metaphorical/metonymic link.

3.3.2 Schema 2 (Path-Direction)

The second Path-schema highlights a *directional* motion. The Path is directed with a specific orientation. This feature of spatial orientation may be utilized to describe activities in other domains which can be conceptualized as going upwards or downwards, such as '節省下來', '沉靜下來'. To illustrate a further categorial extension based on Schema 2, please consider the following examples:

(8) a. V-起來: 交談起來 惱火起來 開心起來
b. V-下去: 唸下去 過下去 努力下去

Examples in (8a) and (8b) both express Aspect with regard to temporal contouring of a non-spatial event: '起來' in (8a) adds an inchoative aspect to the action; '下去' in (8b) signals continuation of the activity. Both subcategories exemplified in (8) are built upon Schema 2 (Path-Direction), with a metaphorical extension from the spatial domain to the temporal domain. The spatial direction 'up' is utilized to express a corresponding feature in temporal contouring, namely, the very start of an event. The spatial direction 'down' is utilized to express the 'carrying-on' of an event.

Although the transfer from spatial to temporal domain is common and extensive cross-linguistically. In Mandarin, only a limited set of path-schemas are utilized to describe temporal contouring. This fact indicates one important aspect of radial structure. That is, not all possible variations of the central case exit as subcategories. The subcategories are derived by culturally-specific conventions and have to be learned.

Another interesting observation associated with schema 2 is that the derived temporal subcategory with the complement -'起來' is further utilized, via a *metonymic* transfer, to specify the temporal or conditional frame for a descriptive proposition. Consider the following examples:

(9) a. 他走起路來 一蹦一跳的.
b. 她打起球來,絲毫不讓鬚眉.

The instances of -'起來' in (9) are usually analyzed as an *evaluative* use in previous studies (cf. Chang 1993, Gao 1993, Yeh 1993). However, the 'evaluative' interpretation actually arises from the descriptive statement following the '起來' -clause, not from the very use of -'起來'. The unit V- '起來' should be treated as separate from the subsequent clause, and its function should be analyzed in terms of its relation to the subsequent clause. In my view, the two uses of V-'起來' in (9) should be glossed as 'when he walks,...' and 'when she plays balls,...'. Thus, V-'起來' in (9) signals a temporal frame for the subsequent proposition under realis mode, or signals a conditional frame under irrealis mode.

From inchoative to temporal or conditional frame, the directional feature -'起來' undergoes a *metonymic* transfer in that the *starting* of an activity is used to represent the *occurrence* or *existence* of that activity, which in turn provides the temporal/conditional frame in relation to another proposition.

3.3.3 Schema 3 (Path Through/Across a Landmark)

The third Path-schema contains two salient features: a Reference-Landmark and a trajectory across the Reference-Landmark. Such a path-pattern, when applied to other domains, suggests a concept like 'overcome an obstacle', as exemplified in '勝過'，'通過(考試)'.

Moreover, the trajectory feature encoded in Schema 3 also provides the conceptual basis for describing Experiential aspect, as in '嚐過'： the spatial motion of going through or across an object is compared to the temporal experiencing of an activity.

3.3.4 Schema 4 (Path Over/Under a Landmark)

The major features in Schema 4 include: a Reference-Landmark and a Trajectory that goes to the top or to the bottom of the Landmark. 'To be on top of something' suggests the concept 'achievement' or 'higher status' in non-spatial domains, as evidenced in '考上'，'配(得)上'. On the other hand, the opposite path pattern 'to be under or lower than something' suggests 'inferiority' or 'lower status', as in '看低'.

Although the complement '上' usually describes the concept 'on top', its seeming lexical opposite '下' is not frequently used in V-R's to express the opposite concept. Instead, the complement '下' encodes primarily a *downward* movement associated with Schema 2.

3.3.5 Schema 5 (Path Into/Out of a Container)

Schema 5 highlights the concept of a container and a trajectory into or out of it. This schema is commonly seen in languages and traditionally called the Container metaphor. As the notion of 'container' may apply almost to any physical object that has a boundary, and even to abstract entity such as the mind, this schema is extremely productive in the coining of V-R compounds.

In terms of lexical choice, the complements '進' or '入' are typically used to express the notion 'into', such as '賺進(手裏)'，'讀進 (腦袋)'. On the other hand, the motion of coming out of a container may be extended to describe the notion of producing something, as a *product* coming out of a given activity-container. Examples of this sort are: '湊出'，'裝出'，'訓練出來'[4], '表達出來'，'整理出來'， etc.

3.3.5 Schema 6 (Path on a Surface)

This schema also underlines a common metaphor Path as Surface (Lakoff and Johnson 1980), on the basis that the totality of all the points covered by a path can be viewed as filling up a surface. The spatial feature of covering a surface along a path may be transferred to other domains to describe the *thoroughness* of an activity, as in '找遍'，'看遍'.

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[4] The suffixes '來' or '去' are deictic markers that functions primarily to indicate the point of view of the speaker. For an intensive and detailed study of these two morphemes, see Wei (1994).

The above characterization of the Path-schemas and their extensions is aimed to provide a fundamental account of the internal categorial structure of the Mandarin V-R compound. Although there may be some extensions and V-R subcategories that are not addressed, the above discussion should be sufficient to establish the fact that the V-R category is well-motivated and radially structured.

4. Conclusion

As an attempt to justify various semantically-diverse cases of V-R compound as belonging to the same grammatical category, this paper undertakes the task to explain the interrelationships among and the motivations behind major subtypes of V-R compounds. It is proposed that Mandarin V-R compounds exhibit properties of a *radial* category by having a central subcategory, established along the Path-Endpoint schema, and non-central subcategories, established on variations of the central schema plus metaphorical or metonymic extensions.

This work is essential to the understanding of Mandarin V-R compound as a cognitive-linguistic component that complies with universal observations on the conceptualization and coding of complex events.

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